Mayo ports to Alpha

CONTINUED FROM PAGE 107

have better compatibility between the C language version used in VAX code and that used in the ANSI-standard version of C, Shamblin said.

Not ANSI-standard

The foundation's software included code that was VAX C-specific and oot ANSI-standard. The VAX C mode of DEC's ANSI C compiler will support those VAX C extensions and oow handles them better than when the foundation completed its port last year, Shamblin said.

"Overall, there were few obstacles. As far as the user is concerned, they'll see the same VMS interfaces. Our code now runs absolutely on Alpha, and we're in the process of putting the money together to purchase a few Alpha machines. We will be replacing our [VAX] 8650," Shamblin said.

Since the Mayo Foundation completed its port, DEC has opened 34 migration centers to assist end users and third parties with the porting and re-engineering of applications to Alpha. Ten of those centers are in the U.S.

DEC offers more EDI application software

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. expanded its electronic data interchange (EDI) family of products recently with new integration software for IBM mainframes, a new versioo of DEC/EDI software and a series of third-party products.

HostBridge for DEC/EDI Application Services offers an EDI gateway for transferring information between IBM's MVS-Batch and VSE-CICS, building on the support for MVS-CICS clients previously available, DEC officials said.

"You can think of HostBridge as an intelligent data-transfer capability, which pulls information out of IBM environments, offering tracking and routing management. The data is fully logged, monitored and auditahle," said Mark Hayward, DEC marketing manager for EDI. "Then, using our FileBridge table-driven mapper, you can take file formats and transform them into industry-standard EDI structures."

DEC also announced a new version of DEC/EDI that offers improved archiving and more reporting capabilities, support for remote system management tools and multinational character sets, performance improvements and electronic-mail integration with support for beepers, company officials said.

High praise

Users spoke well of the capabilities of DEC's EDI products and the new features available with DEC/EDI Version 1.2.

Pat McGinn, project manager in the battery group at Johnson Controls, Inc. in Milwaukee, is using DEC/EDI to integrate data transfer between OEMs such as Ford Motor Co., Chrysler Corp., Nissan Motor Corp. and Honda.

"We do just-in-time contracts and use EDI to link ourselves with our customers and to ensure information transfer," McGinn said. "Used properly — integrated with applications — [EDI] becomes almost interactive and keeps us all informed about what's going on at all times. Application integration isn't easy, but it's where the payback is, rather than merely treating EDI as a $200,000 fax machine."

He added that DEC/EDI Version 1.2 automates archiving on the VAX, allowing users to access more data and to "go back further for customers."

"The throughput is nice — FileBridge builds data in an ordered fashion and pushes the data through the system at breakneck speed with a converter," he said.

> "USED PROPERLY — integrated with applications — [EDI] becomes almost interactive and keeps us all informed about what's going on at all times."
>
> PAT MCGINN
> JOHNSON CONTROLS

DEC also announced a series of nine "EDI-ready" applications from third-party vendors. Ross Systems, Inc. in Redwood City, Calif., is offering its financial accounting Renaissance Series, Promix manufacturing and Ross Distribution software for EDI. Other distribution software now available includes: DCS/Logistics from Andersen Consulting, Modis from Mancos Computers and MDS from Distribution Architects International; health care Administrative Data Systems software from Shared Medical Systems; transportation PowerDoc EDI from Fraser Williams Group; and customs brokerage Alliance software from ASA International in Salem, N.H.

DEC/EDI Version 1.2 and HostBridge are both shipping and are priced starting at $10,000 and $36,000, respectively.

Additional clients for IBM mainframes are priced at $10,000 for VSE applications and at $18,000 for MVS.

Linus Press, an EDI analyst at Dofasco, Inc., a Hamilton, Ontario-based steel manufacturing firm, is moving the firm's EDI applications from an IBM mainframe to DEC/EDI because the costs of upgrading the mainframe were prohibitive.



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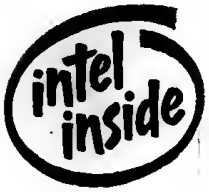


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NEW PRODUCTS

Database management

BMC Software, Inc. has released Version 3.2 of Copy Plus, a copy utility.

The product was designed for the IBM DB2 database management system. Individual table spaces can be copied with an option that lets users manually select an I/O access method. External packages such as BMC's Data Packer can be used to compress output copy data sets. A data integrity feature that catches table spaces with error ranges is also included, and the new version has added an Empty No option to make sure incremental copies are made and registered even when change pages are not found, the company said.

Version 3.2 of Copy Plus prices start at $12,000.

BMC Software
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

Quadrant Corp. has released Version 3.0 of KeepTracker, a computer asset management product.

According to the company, KeepTracker 3.0 helps users who need to follow the status, reliability and location of software, hardware and other system components throughout an organization. The product has the ability to maintain data on software, purchases, service contracts and warranties. Users can define and store report formats with a true multifile report writer.

Version 3.0's features include data entry keystrokes, cascading menus and automated batch cycling. The product installs on any VAX/VMS CPU.

Prices start at $9,600.

Quadrant
340 Front St.
Marion, Mass. 02738
(508) 748-1283

Allen Systems Group, Inc. has introduced PageFix.DM, an interactive, menu-driven facility that displays and modifies Computer Associates International, Inc.'s CA-IDMS database pointers.

According to the company, the product resolves database abends caused by corrupted or broken pointer chains. Full-screen display and update capabilities for pointers are provided, with corresponding data in alphanumeric and hexadecimal format. Users can locate the source of broken chains when the product displays the associated line index and database page number. PageFix.DM also has the ability to display line indexes, data and pointers on separate formatted menu screens.

Pricing starts at $17,600.

Allen Systems Group
750 11th St. South
Naples, Fla. 33940
(813) 263-6700

Utilities

BlueLine Software, Inc. has introduced CACHE/VSE, a direct-access storage devices (DASD) caching product.

According to the company, the product was designed to increase the performance of every site running the VSE operating system. The software reduces DASD I/O by maintaining high-use records in real storage buffers, and the repetitive I/O to those records is eliminated. The product can be used for an assortment of files, including SAM and VSAM data sets, label areas and the files from any database management system.

CACHE/VSE prices start at $440 per month. Permanent license prices start at $13,000.

BlueLine Software
Suite 690
5775 Wayzata Blvd.
Minneapolis, Minn. 55416
(612) 542-1072

Data storage

System Industries, Inc. has introduced an upgraded chassis for its Raider's Edge series of disk subsystems.

According to the company, the product eliminates the power supply as a failure point and adds battery backup. Raider's Edge subsystems are based on redundant arrays of inexpensive disks technology and consist of five disk arrays offering 1.8G or 3.3G bytes of total storage capacity.

Upgraded subsystems have individual drives that are hot-swap removable and keyed, electromechanical interlocks to prevent accidental drive removal, the company said.

The subsystems were designed for Sun Microsystems, Inc., Digital Equipment Corp. and networked environments.

Prices start at $41,500.

System Industries
1855 Barber Lane
Milpitas, Calif. 95123
(408) 432-1212

Digital Equipment Corp. has announced an option to its StorageServer 100 file server.

According to the company, the option provides a maximum on-line capacity of 342G bytes in formatted capacity. The StorageServer 100 system was designed to extend and enhance Network File System capabilities. The system combines a standard DECsystem reduced instruction set computing server with hierarchical file server software and rewritable optical disc technology.

The 85G-byte option for the StorageServer 100 system costs $119,500.

DEC
146 Main St.
Maynard, Mass. 01754
(508) 493-5111

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IN BRIEF

Unisys to extend 4GL

■ **Unisys Corp.** plans to extend Linc II, a fourth-generation language, by reselling a set of application development utilities from London-based **Advanced Business Solutions PLC**. ABS Kit, which runs on Unisys A series and 2200 series mainframes, provides version control, quality assurance and cross-referenced inquiries.

■ Information Engineering (IE) methodology maven James Odell recently joined **Intellicorp, Inc.**, an object-oriented computer-aided software engineering (CASE) tools maker in Mountain View, Calif. Odell will work with JM & Co., one of CASE notable James Martin's companies, to develop an object-oriented version of IE.

■ **Borland International, Inc.** announced Paradox SQL Link for **Novell, Inc.**'s NetWare SQL 3.0, a tool designed to let Paradox 4.0 users query applications built in Btrieve, Novell's record manager. The $395 product translates Paradox's query language and menu commands to the right dialect of SQL.

■ SuiteDome, an object-based development workbench from San Diego-based **Suite Software, Inc.**, is available on HP 9000 Series 700 and 800 machines from **Hewlett-Packard Co.** Prices range from $700 to $12,000.

■ **Pacific Gold Coast Corp.**, a PC application development tools maker in Glen Cove, N.Y., has enhanced PGC CASE. The new version, priced at $150, lets users combine editing requests, choose from three icon and font styles and resize graphs.

■ Unix application development tool maker **Pure Software, Inc.**, based in Los Altos, Calif., and **Mercury Interactive, Inc.**, based in Santa Clara, Calif., plan to merge and cross-market their product lines starting early next year.

Words from the CASE-wise: Think big, know your vendor

Battle-scarred development tool veterans offer advice to potential users

BY KIM S. NASH
CW STAFF

Computer-aided software engineering (CASE) veterans have words of wisdom as well as specific caveats for potential or new users of the development tools.

Pre-CASE steps — vendor evaluation and very early implementation — are particularly important, they said. Before plunking down a fat check for products from Texas Instruments, Inc., Intersolv, Inc., KnowledgeWare, Inc. or any other CASE bigwig, measure your shop against the following criteria:



Is CASE the answer?

• **Multiple problems.** One of the most oft-cited warnings from those in the know is that CASE for a single project or in limited development use is a waste of time and money.

"It's a big commitment, not something to be taken lightly," said Randy Dougherty, engineering technical director at Martin Marietta Corp. in Dayton, Ohio.

• **Flexible problems.** Do not underestimate the cultural and organizational upheaval that accompanies CASE. Users advocate giving project teams plenty of leeway. That means that although you want to get rolling with the new tools, choose projects that are flexible enough to allow movable deadlines. The Chase Manhattan Bank NA in New York, for example, tested Easel Corp.'s products in several pilots for more than a year before starting formal use.

• **Open access to data.** Possessive users or staunch hierarchical management won't take kindly to the integrated systems that are the goal of most CASE projects. Yet buy-in from these troops can be critical to the ongoing use of a new technology.

Rapid application development modules that are part of several CASE workbenches are getting people involved at companies such as Chemical Banking Corp. and The Royal Trust Co.

Rapid application development calls for developers to meet with users to "spec out" the system in question and to build and test quick prototypes together. Users know their voices are heard and programmers are spared much back-and-forth niggling that can bog down development efforts.

• **Be ready to relearn.** Thorough programmer training that incorporates a gradual change in how traditional mainframe developers work is a must. It is overwhelmingly cited by CASE pioneers as the most critical step to getting the most out of CASE tools [CW, Oct. 12].

Business skills needed

CASE pointed up skill base deficiencies at Levi Strauss & Co., which has been doing serious CASE since 1989. Besides learning the ins and onts of the particular CASE tool and methodology, Levi's staff needed to increase business acumen.

"Design in the 1970s was really just replicating manual tasks. Now we have to figure out how to make automated tasks better for the business," explained Donna Rund, director of information engineering.

• **Talk, talk, talk.** Get the scoop on different tools by meeting with current users in similar industries — and not just the ones the vendor uses as standard references. User conferences can be a good place to find them, but call industry associations, too.

• **Easy instruction.** Make sure training, consulting and other hand-holding are available either from the CASE vendor or a third party experienced with your tool choice.

Before diving in

You have the nifty CASE workbench installed. Now what? Don't touch that dial. First, install project management tools. Users said CASE efforts grow quickly, which can make tracking completed work and scheduling future tasks troublesome.

Plus, project management software, which is available from third parties and Big Six firms, can foreshadow hurdles down the line and help staff prepare.

Next, devise metrics to judge software quality, time or money savings to measure the success (or failure) of a finished system. Metric devices are a personal thing.

Some shops, such as General Electric Co., support function points, while others like to track man-hours spent on software maintenance.

Any technique will do as long as there is some way to measure procedure pre- and post-CASE. How else will you know how far the tools have taken you?

New API rallies support for SNA standardization

BY GARRY RAY
CW STAFF

Developers who support IBM's Systems Network Architecture (SNA) in their applications will be able to use Microsoft Corp.'s Windows Open System Architecture (WOSA) to write Windows applications with embedded SNA services. In addition, more than 20 vendors of SNA services, including IBM, announced plans to comply with a single application programming interface (API) to access SNA service from within Windows programs.

Microsoft said in its recent announcement that the new set of more than 100 APIs will support common SNA services such as High Level Language API, Advanced Program-to-Program Communications and Logical Unit 0. Previously, corporate and commercial software developers needing access to those SNA services were obliged to use a variety of vendor-specific APIs.

Prior to the announcement, "it was harder for developers to use SNA services because there were multiple APIs to pick from," said Mike Fritz, group marketing manager of systems marketing at Microsoft. Developers "want to write to a standard set of APIs and choose from a lot of back-end SNA environments," he added.

Microsoft previously had announced that its WOSA architecture would also support communication standards including Unix sockets and the Open Software Foundation's remote procedure calls. WOSA specifications also provide data access APIs through Open Database Connectivity and messaging services through the Messaging API. Both are Microsoft protocols.

"Over time, corporate developers have come to us and want-

Continued on page 122

PC tool supports CICS

BY GARRY RAY
CW STAFF

A PC-based Cobol development tool has been updated to support programs that use IBM's CICS.

The tool, Cobol Analyst/CICS 1.5 from SEEC, Inc. in Pittsburgh, can analyze Cobol programs to provide information such as system flow and relationships between CICS programs, company officials said. Such information is useful in maintenance or in analysis before redeployment of applications on other platforms, they added.

The Microsoft Corp. Windows-based tool includes its own data dictionary for analysis and storage of Cobol programs, CICS data models and CICS screen definitions. Information from other SEEC products that analyze IBM's IMS and VSAM programs are also stored in the dictionary.

Once a data dictionary has been created and relevant Cobol programs have been imported and analyzed by Cobol Analyst/CICS, programmers can navigate through one or more program modules by specific variables, I/O screens or other program entities.

Added options

The tool provides a variety of program representations, including full CICS data entry screens, program flow charts and data model and structure diagrams. Various standard programming metrics are also provided.

Although it is not a programming workbench, Cobol Analyst/CICS includes editing and notation capabilities that can be used to alter an existing program.

These entries can be exported as updated program modules and used in a traditional Cobol development environment on a mainframe or PC, company officials said.

Available immediately, Cobol Analyst/CICS is priced at $750 and includes the company's Care Data Dictionary.



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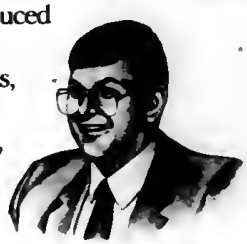
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Hybrid environment may ease app development

Sports C++ incremental compiler, framework, libraries

BY GARRY RAY
CW STAFF

A hybrid programming environment may make it easier to develop applications for the Apple Computer, Inc. Macintosh, Microsoft Corp.'s Windows and various Unix platforms.

Component Workshop, a C++ development environment from Component Software Corp. in Lexington, Mass., was announced last week for the Macintosh, with a Windows version expected by the end of this year, company officials said. Unix versions will be delivered later in 1993, they added.

In contrast to the slate of development environments and class libraries released in recent months, Component Workshop contains an internal incremental compiler similar to that used in SmallTalk. Incremental compilers generate application code as programs are entered into a development environment, which allows coders to rapidly prototype and test their applications.

However, similar to interpreted programming environments such as Basic, the incrementally compiled code executes only within the development environment. Another tool, which Component Software calls the Extruder, converts application code in the environment into C++ source code. That source code, which the company said is compatible with AT&T's C++ Version 2.1, can be compiled with a standard C++ compiler.

According to the company, Component Workshop also includes a class library, an application framework and preprogrammed "components" to speed program construction.

Among the integrated development tools are three browsers, a "composer" to create and edit classes, debugging tools and a program editor. A class library and applicatioo framework handle the standard functions and behaviors of an application, while components similar to Unix "widgets" can be used to add editing, list management and object network diagramming to an application.

Slated for shipment in November, the Macintosh version of Component Workshop is priced at $2,495. Introductory pricing will be available for a limited time.

New API

CONTINUED FROM PAGE 119

ed different services," said Michael Callahan, manager of product marketing at Wall Data, Inc., a Redmond, Wash.-based provider of the Rumba connectivity software.

Developers "may be satisfied with [the new services], but if their needs change, they'll have a problem" using enhancements made by one vendor, but not supported by others. The SNA APIs will reduce that problem and make it easier for indepeodent software vendors and corporate developers to make use of a consistent standard, he added.

A 300-page Windows SNA API specification describing the more than 100 API funtions will be made available on the CompuServe computer network within the next 60 days, according to Microsoft.

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COMMENTARY

Doug Barry

When to use object DBMSs



Amid the hype over object-oriented programming, one area of the technology may be on the threshold of providing real gains to users: the lesser-known technology of object-oriented DBMSs.

Object-oriented DBMSs will generate $500 million in revenue by 1996, according to International Data Corp. — up from virtually nothing at the start of this decade. This is largely because object-oriented DBMSs support the use of "complex data." How do you know if your data is complex? Some guidelines follow. Also, see Advanced Technology (page 28) for a more complete description of object-oriented DBMSs.

Let's say you are designing a RDBMS using the proper design techniques for relational technology. You have complex data if you find yourself making one or more of the following statements:

- "I'll need to 'de-normalize' if I want to get any performance."
- "The number of relational joins I'm going to oeed for most uses will kill the system."
- "I'm going to need different relational views for each type of data so I do not show all the oull fields."
- "Different types of data have the same field or attribute name. The names have different meaning depending un the type of data."
- "My program oeeds to use graph data structures such as binary trees. I'll need to transform trees to relational tables and vice versa to provide graphic support."

Commonly, you hear of complex data in computer-aided design and engineering software. But that's not the only place you'll find it. I encountered complex data when I designed a RDBMS for a personnel system in the mid-1980s. It left me with all of the above laments, except the last one. I didn't need graphics. Yet today, that system would likely also have hypertext or multimedia.

Even without graphical envirooments and applications, complex data is all around you. Simple human concepts, such as "a robin is a type of bird," are difficult to put into relational and predecessor (i.e., flat file) DBMSs.

For example, my personnel database system contained exempt employees and nonexempt employees. Sometimes these two types of employees were treated differently by the system (as exempt and nonexempt). Other times they were treated in the same manner (as employees). I could easily bave represented this in an object-oriented DBMS because it recognizes classes and subclasses of data.

Furthermore, with an object-oriented DBMS, I could create different procedures to handle these two cases (procedures are called "methods" in object terms). I could use the name "pay" for each method. Each would calculate pay in the manner appropriate for each class of data. The duplicate name, "pay," would oot confuse the system because methods stay with the data and not with the application.

The relational joins that concerned me earlier now either go away because of the object data model or are replaced with data references. And traversing a data reference is considerably faster than a join.

Should you be considering an object-oriented DBMS? The technology is still new. It does not have the breadth of third-party tools made available during the last decade of predecessor or relational technology. That may deter all but the experimental. Nevertheless, my advice is that if the laments that I listed earlier are becoming a problem, users might do well to consider an object-oriented DBMS.

I do not believe object-oriented DBMSs will replace relational technology. But most RDBMSs bandle only a relatively small percentage of database problems. The remaining data is the target for object-oriented DBMSs.

No technology provides the ultimate solution, and object-oriented DBMSs are not panaceas for all that ails today's database administrators.

As object-oriented DBMS technologies are tested and implemented, other database problems will no doubt arrive that will tax their capabilities. Object-oriented DBMSs are simply the next stage in the evolution of DBMSs.

Barry is co-founder and chief technical officer at Itasca Systems, Inc. in Minneapolis.

Versant updates DBMS C++ tool set

MENLO PARK, Calif. — Versant Object Technology Corp. last week expanded its line of application development tools for its object-oriented database management system with the addition of a report generator and industry-standard SQL.

The Versant C++ Application Toolset Release 2.0 includes Versant Report, which the company claimed is the first report generator available for an object-oriented DBMS. Versant Object SQL is intended to allow developers to leverage their experience with SQL in a Versant environment.

Graphical help

Release 2.0 also features enhancements to Versant Screen, a C++ based graphical application development tool.

The tool kit is available for Sun Microsystems, Inc. SPARCstation computers, although versions for other computers are scheduled for release by the end of the year.

Versant also announced that it has signed agreements to integrate the Versant Object Database Management System with five leading object-oriented development tools.

The agreements were signed with the following companies: Intellicorp, maker of the Prokappa CASE front-end development tool; Lucid, Inc., which offers the Energize Programming System; STEP, provider of the STEP Toolkit for manufacturing applications; Protosoft, maker of the Paradigm Plus design tool; and Persistence Software, Inc. for integrating applications developed for the Versant Object Database Management System with DBMSs from Oracle Corp. and Sybase, Inc.

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NEW PRODUCTS

Code libraries

EMS Professional Shareware has started shipping the NW Utility Library on CD-ROM.

The library consists of a collection of 567 Public Domain and Shareware products designed exclusively for Novell, Inc. NetWare local-area network users. A database index and search program is included, and the contents of product documentation files can be read and printed as the database is browsed, the company reported. The library includes Btrieve, Backup, Boot, Groupware, OS/2 Print, Remote and Tutor plus a variety of other types of products.

The library costs $99.50.
EMS Professional Shareware
4505 Buckhurst Court
Olney, Md. 20832
(301) 924-3594

Born Software Development Group has announced Guide/400, a Dynamic Linked Library.

More than 30 C routines are provided that offer record-level access and management of data files that are on a Distributed Data Management (DDM) target such as an IBM System/36 or Application System/400, the company reported. Under OS/2 or Microsoft Corp.'s Windows, users can write an application that can be opened, accessed, modified, locked and unlocked, and users can close files on a DDM target system.

Pricing ranges from $80 to $195 per copy. A development kit costs $2,000.
Born Software Development Group
Suite 120
445 E. Lake St.
Wayzata, Minn. 55391
(612) 449-4993

Computer-aided software engineering

Visible Systems Corp. has released Version 5.0 of the Visible Analyst Workbench I-CASE tool.

Visible Analyst Workbench is an integrated computer-aided software engineering (CASE) tool set. The product is a fully adapted application for Microsoft Corp.'s Windows operating environment with both forward- and reverse-engineering capabilities. Visible Analyst Workbench supports a variety of development techniques and generates Cobol source code, SQL database schemas and C source code from designs developed in the system.

New Windows features have been added, including pop-up and pull-down menus and support for device drivers, color sets and fonts.

The Visible Analyst Workbench Version 5.0 costs $1,895.
Visible Systems
950 Winter St.
Waltham, Mass. 02154
(617) 890-2273

Application development tools

Nu-Mega Technologies, Inc. has started shipping Version 2.0 of Bounds-Checker, an MS-DOS memory protection tool.

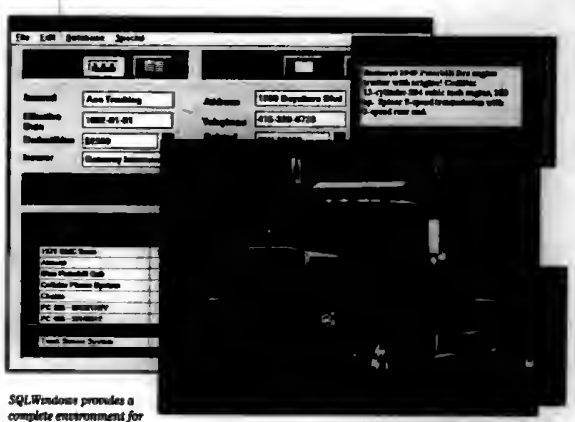
The product was designed to automatically detect common memory problems. Illegal memory access outside a program and code overwrites can be located, and the product handles array overrun detection. A new Smart Mode feature has been added that uses a built-in knowledge base of predefined heuristics, eliminating any complex decisiona from the user by automatically deciding the legitimacy of memory access, the company reported.

Bounds-Checker 2.0 costs $199.
Nu-Mega Technologies
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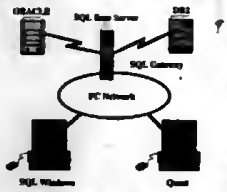
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53. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
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12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

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i SPY

Foreign governments are out to steal your company's secrets. Is your information protected?

BY GEOFF TURNER

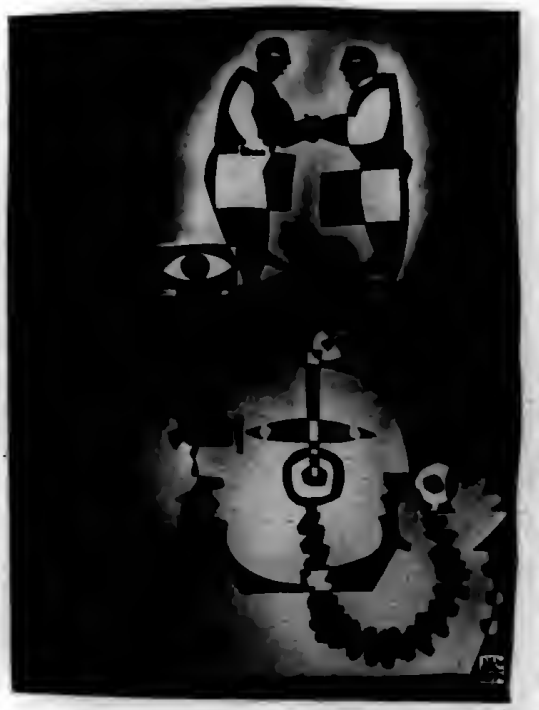
Precision Tools USA's Marketing Vice President Bill Smith finished his memo and punched the key that would send it to a fax server on the first floor of the firm's chrome-and-glass high rise and then on to the company's European operations manager. The memo was the go-ahead on a long-discussed plan for Precision's first major product launch in Europe. D-day, the document confirmed, would be next month.

As Smith sent the memo on its way, the thought occurred to him that faxing might be risky, but he shrugged off his doubts. "James Bond stuff, ha!"

In its journey to Europe, the fax traveled up to a satellite, back down to an earth station and through the telephone system to its destination.

But the fax went on another, secret journey. It was picked up by an antenna belonging to the European country's national intelligence agency and was routed to the agency's computers. After recognizing the key words "Precision Tools," the computer automatically routed the fax to an intelligence analyst, who realized it would be of immense value to one of the country's state-owned companies. He promptly sent the missive to the company's president.

Upon reading the intercepted fax, the president moved his own new product launch date up, beating Precision to market with a lower priced product. Precision's marketing team chalked the incident up to bad luck. The espionage continues undetected.



David Diaz

U.S. companies today believe that advanced economic espionage techniques would never be directed against them. They see economic espionage — spying done by national governments to get company secrets — as rare and exotic. But these incidents are happening more frequently than companies think. In fact, CIA director Robert Gates says that nearly 20 nations are actively involved in intelligence collection activities directed against U.S. businesses (see partial list at left). What they're after are U.S. corporate trade secrets, advanced technology ideas, product data, business plans and other proprietary data.

Unlike a business competitor, intelligence services employ resources of great scale and sophistication. For example, while an unethical competitor might illegally wiretap a specific office phone line, a foreign intelligence agency would have the ability in its country to legally tap every phone line a U.S. company uses. In this way, it could monitor every conversation or transmission over those lines, both local and international. It also could — and does — intrude into corporate information systems and intercept business messages in commercial and private networks.

IS managers cannot sit idly by while foreign national intelligence agencies pick U.S. companies' pockets. Corporate data is in danger as global competition becomes heated. And the quickening pace of technology innovation is adding fuel to the fire; technologies such as portable information systems, cellular telephony, wireless networks, electromagnetic emissions and digital telephony may substantially increase firms' vulnerability to spies.

Who's doing it?

As the Iron Curtain parts and the Cold War thaws, the dynamics of what is important has shifted from military one-upmanship to economic advantage. Former Soviet bloc nations as well as our allies and Third World nations are using sophisticated technical intelligence collection resources to get the kind of information that will help them compete more effectively on a global plane.

For their part, the former Soviet bloc nations place high national priority on becoming more effective business competitors with the market economies of the West.

They honed their intelligence-gathering skills during the time they were concentrating on acquiring Western military technology from U.S. defense contractors and duplicating it to remain competitive. Their methods included intercepting voice, fax and data communications from satellites, marine cable, land line, microwave, etc.; intruding into corporate networks; bugging office automation equipment; and detecting and interpreting computer electromagnetic emissions, among other methods.

Now these methods are being directed at corporate information.

Even our Cold War allies are turning their intelligence agencies against U.S. corporate interests. With the lessened threat of a catastrophic nuclear war, national relationships

Continued on page 130

Culprit countries

Nations active in economic espionage

China: The most aggressive.

Former Soviet Union: The most active.

France: The most notorious.

Japan: The most overt.

Israel: The most diverse.

Sweden: Up-and-comer.

Switzerland: Up-and-comer.

UK: The most successful.

Turner is technical director at ManTech Strategic Associates Ltd. in Fairfax, Va., where he consults on information security, cryptography and operational security for corporations and government. He is a former naval intelligence officer.

Continued from page 129

previously defined in terms of military alliances change significantly when viewed in terms of economic competition. Allies become competitors.

For instance, the French equivalent of the CIA, known as the Direction Generale de la Securite Exterieur, has targeted IBM and Texas Instruments, Inc. The agency infiltrated IBM and TI European branch offices, and a French consular officer was caught sifting through an electronics company executive's trash in Houston.

Never given much credit for technical sophistication, Third World intelligence agencies have in fact received training from East and West intelligence agency partners. Freed from Cold War obligations, their interest has turned to bolstering local markets and seeing that their companies thrive. Unlike more advanced governments, Third World agencies tend to have fewer restraints against spying methods and are thus known to be more reckless in their methods and selection of targets.

Fighting the crime

Combating the economic espionage problem is tough because, when successful, such espionage goes undetected. No physical evidence exists when an intelligence agency intercepts a commercial communication. Furthermore, when such incidents are discovered, they are rarely reported. Having a public squabble with a host nation's intelligence agency is generally not going to help a U.S. business with overseas operations.

U.S. companies must practice "safe communications," taking precautionary measures to avert a possible breach of sensitive corporate information. First and foremost, companies should refine their information security policies to identify which corporate information is sensitive and requires protection. They should expand logical security coverage, particularly access controls, to include all applications, systems environments and networks wherever sensitive information is processed or stored.

Stronger and more broadly applied cryptography is one of the most important and effective defenses against economic espionage.

Commercially available encryption technologies include the Data Encryption Standard (DES) and Rivest Shamir Adleman, or RSA, a mechanism for generating cryptographic digital signatures. The banking industry has adopted DES to protect the trillions of dollars transferred electronically every day. The only way to break into a DES-encrypted message is to try each of more than 70 quadrillion secret keys, an effort measured in terms of years.

But what of emerging new technologies, whose widespread use will drastically increase the vulnerability of sensitive corporate data to economic espionage? Even these technologies can be protected:

Technology

Portable information systems.

Threat

Portable and laptop computers are placing sensitive corporate information ever further from basic security controls that protect data in large systems or local-area network environments. Small computers can easily be stolen, and it doesn't take much effort to copy hard drives or fluppy disks. Furthermore, automated remote log-ons to electronic-mail systems provide a door into a corporation's E-mail system as well.

Couple the ease with which such portables can be tampered with and the fact that intelligence agencies (especially those in France and Hong Kong) routinely search visiting executives' botel rooms, and you've got an explosive situation.

In a recent *Computerworld* article [Oct. 12], for example, the former security director for the Senate Intelligence Committee claimed French intelligence agents took two laptops containing corporate secrets from the Paris hotel room of NCR Corp. executives. (NCR denies the incident.)

Defense

When going abroad, encrypt all seositive data on the portable's internal hard drive and on any floppy disks so a thief cannot access the sensitive information. Macros used to remotely log-on to networks shouldn't contain user IDs or passwords to prevent unauthorized use.

Technology

Cellular telephony.

Threat

Cellular conversations can be intercepted, as Princess Diana discovered when private citizens, using scanners, plugged into and recorded some personal conversations said to be between Di and a male friend via a cellular phone. There are now commercially available products that can target specific cellular phone numbers.

National intelligence agencies with access to national Postal Telephone and Telegraph (PTT) authorities can just as easily intercept a full cellular session. They can monitor cellular calls from within the PTT's cellular switches without having to track calls over the air as they transfer between cells.

But the problem goes beyond just voice conversations. As corporations begin to use cellular communications to link laptops, faxes and other information technology into oetworks, they increase their volume of sensitive data.

When global cellular systems such as Motorola, Inc.'s Iridium become operational in a few years, iotelligence agencies can deploy intelligence collection satellites that monitor cellular calls worldwide.

Defense

The best option is to avoid discussing or transmitting sensitive data over a cellular telephone. While encryption may prove valuable, it is not yet effectively incorporated into cellular systems.

When logging on to networks over cellular links, employ user authentication methods, such as security tokens or challenge-response systems, that doo't depend on fixed passwords.

Technology

Wireless networks.

Threat

Many dismiss wireless oetworks as a security problem, citing their limited range and use of spread spectrum transmissions as a barrier to interception. Such obstacles do make interception difficult for most amateurs, but intelligence agencies have land- and space-based resources that enable them to intercept and exploit very weak signals at ranges measured in hundreds of miles, let alone hundreds of feet.

Defense

Encryption offers a solid defense.

Technology

Electromagnetic emissions.

Threat

Intelligence agencies have been able to obtain useful information from the incidental electromagnetic emissions of information processing and communications equipment for decades. The KGB used this method to monitor the U.S. embassy in Moscow several years ago.

Think of the repercussions if an intelligence agency read the emissions from a cryptographic device encrypting sensitive information. It could determine which secret cryptographic keys were used, subsequently enabling it to read all communications encrypted by that secret key.

Defense

Government systems processing and communicating classified information have long had security controls to suppress electromagnetic emissions to defeat spies. Under a certificatioo program called Tempest, equipment has to meet very exacting design and shielding requirements before it can process sensitive data.

Unfortunately, such cootrols greatly increase the cost of the equipment, a cost many corporations could not justify in the past. With foreign intelligence agencies oow focusing their collection resources on business, however, this cost/benefit equation is changing. Companies should consider shielding either the equipment or rooms in which "sensitive" equipment operates.

Technology

Digital telephony.

Threat

Congress is considering legislation requiring digital telephony equipment operators (including private-branch exchange operators) to provide remote access to communications carried by the equipment. The reason is to make life easier for law enforcement agencies that need to conduct court-ordered wiretaps.

Unfortunately, this Digital Telepbony Amendment, which the FBI supports, does not include any provision for security controls over the new wiretapping facility to be designed into all digital telephony equipment. Should this legislation pass unmodified, the wiretapping capability could leave digital communications equipment vulnerable.

Defense

IS managers and their telecommunicationa people should closely monitor the progress of the legislation and seek to build and support a more appropriate accommodation between industry and law enforcement.

Information technology managers need to begin to consider that highly sophisticated espionage techniques may be directed against their corporations.

It is reasonable and prudent to plan security controls to defend against this threat. These controls don't have to be excessively costly or exotic; in many cases they need only consist of beefing up existing controls. Just do it. ■

Foreign intelligence agencies

What they target

- Proprietary technology: Production methodologies and product data.
- Production data: Schedules, costs, margins.
- Financial data: Profits/Losses, margins, stock issues.
- Personnel data: Salaries, performance reports.
- Security controls: Passwords, cryptographic keys.
- Research and development: Breakthroughs.

Who they target

- Companies in direct competition with government-owned companies.
- Companies vital to the national security of another nation.
- Companies with advanced proprietary technology not produced in a nation interested in developing that technology (e.g., former Soviet states).
- Companies perceived as being too dominant in local markets.

Real life

Government agencies really target U.S. businesses. That point is harder to get people to accept than convincing them that intelligence agencies use advanced technical collection methods.

The case of stolen information.

Recon Optical, Inc. in 1986 had a contract to develop a photo-reconnaissance system for the Israeli government that involved having three Israeli Air Force officers monitoring the company's progress at Recon's facilities in Illinois. When a contractual dispute between the company and the Israeli government reached an impasse, Recon halted work and ordered the Israeli officers to leave the building.

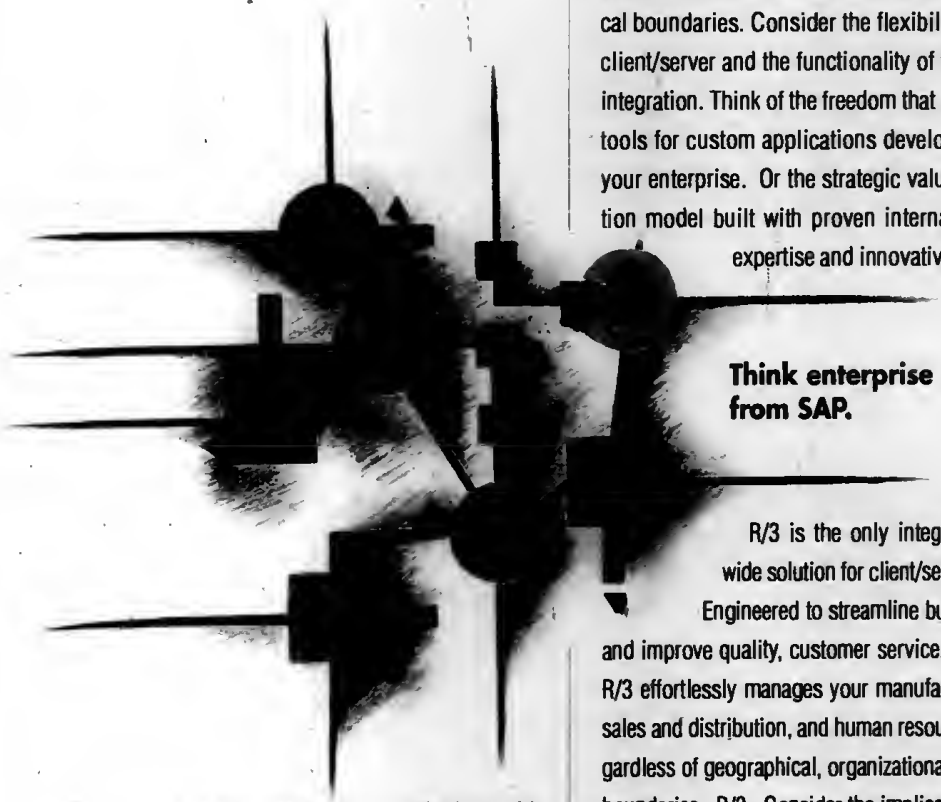
The officers did so but were apprehended attempting to walk out with boxes of proprietary technical documents and plans to steal Recon's proprietary technology. Recon subsequently claimed that someone had already provided restricted data to an Israeli competitor, El Op Electro-Optics Industries Ltd.

A panel from the American Arbitration Association, called in to resolve the dispute, ordered Israel to pay Recon Optical $3 million in compensation.

While the arbitrators ruled that the Israeli officers did steal Recon proprietary data, they did not conclude that this action was officially sanctioned. But they did say the Israeli government attempted to cover up the situation and disciplined the officers not for the theft but for allowing the theft to be discovered.

The arbitrators chided Recon for its "slipshod" protection of sensitive data.

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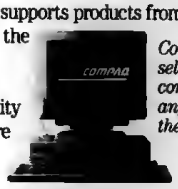
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THE CIO VIEW

Mr. Fixit

Chris Bluemer has tamed the waist-high alligators and turned around insurer Fireman's Fund of New Jersey — without in-house IS. "We outsource a ton of stuff," he says.

BY JOSEPH MAGLITTA
CW STAFF

Chris E. Bluemer likes to joke that his resume is very short. On one side, deadpans the 51-year-old president and chief executive officer of Fireman's Fund of New Jersey (FFNJ), are three words: "Chris Bluemer — Fixer." On the other, a single sentence: "The last five guys I worked for made chairman." Then his phone number. Later, laughing, he hands out buttons asking, "Why be normal?"

A well-traveled turnaround troubleshooter and outsourcing advocate, Bluemer has reason to smile. His upbeat humor, clear talk and low-key but unflinching focus on the bottom line have helped Bluemer (pronounced Blee-mer) transform the battered subsidiary of Fireman's Fund, Inc. into a shiny new contender in the Garden State's crack-'em-up insurance game — all in just 18 months.

Consider this: In mid-1991, FFNJ had one employee — Bluemer. Auto insurance policies, once totaling 80,000, had shrunk to 16,000. Tired of fighting local regulators, the parent company had pretty much given up on doing business in the state. Today, the plucky Jersey offshoot boasts more than 30,000 policies, 28 employees and annual revenue of $40 million.

Bluemer, a genial optimist who is fond of quoting e. e. cummings and his own motivational poetry, says he hopes the same turnaround skills honed at four previous positions will help his new firm's sales grow another 50% in 1993.

FFNJ's wall-less organization is strictly 1990s. To keep staff lean and low-risk, all computing is outsourced. "My information officer is Cigna," Bluemer explains. "My claims manager is Robert Plant [in Somerset, N.J.]."

The arrangement has worked so well, in fact, that Bluemer says Fireman's Fund used the New Jersey unit as a test case for outsourcing its national data processing operations.

Not that there haven't been bumps. Like the time it took several months to reconcile technical differences of two different reporting systems. (The problem was eventually solved when Bluemer stepped in only a few weeks before a critical deadline.)

But overall, Bluemer says he is sold on outsourcing. He sees it as the smartest way to get a business up and running quickly and cheaply. "We take the position that we outsource everything we can, except sales agents," he says. "With 25 people, we outsource a ton of stuff."

In a recent interview and speech, Bluemer shared his views on technology and outsourcing.

Why outsource?

The automobile industry in New Jersey is a kind of unique event. I guess the word "crisis" is not overused. The industry has been fighting with the government and trying to downsize. The state said: "You're going to get 40,000 cars or you're not going to be able to play here."

Let me give you a true picture of my job description: out in the Everglades. Surrounded with alligators. They gave me a sign that said, "Drain the swamp." There are people who thought that I was absolutely stark raving mad — my wife among them.

To do all these things internally would have been possible. Fireman's Fund certainly has the capacity. And they have decent systems — very good systems. But they didn't have the right momentum. They said, "No, we don't want to throw resources at you because we want this to be separate, and we are downsizing."

If your mission is to ultimately sell something, you want to modularize it right from the get-go. Our operation is dealing with one product in one state. So our need to generate the regulatory classes of different states and all those kinds of Rubik's Cube equations don't interest us.

The parent company said, "OK, we're going to watch you closely. You have to keep your expenses down." The capital you need to start a company in this business from scratch is one thing. The time element is another.

When we started, we were already behind the eight ball. We couldn't have done these things without having tremendous amounts of capacity. Fortunately, the capacity was out there.

I did my 1993 budget in two days. Here it is, five pages, bang bang bang bang bang. This contract for losses, this contract for policy issuance and bookkeeping, this contract for personnel services. It's easy.

Dealing with outsourcers

My operations guy might be a vendor, but he knows he's my partner. He's president of a different company, but he knows he's not subservient to me. When you're in my office, you're just like my employee. I know you're a vendor, I respect you as a vendor, and I know you have other agendas. But when you're with me, we're partners. We solve [problems] often by putting everybody in the same room. It doesn't work perfectly.

In controlling outsourcers, test 'er, don't pester. I don't have weekly meetings with these people. I don't call them at odd hours of the night. We both have a fax machine. He knows where I live, I know where he lives. We all have the same paycheck, and I funded it.

Continued on page 134



Rod Morgan

The CEO: Chris E. Bluemer, president and CEO of Fireman's Fund of New Jersey. 1963 graduate of the University of Connecticut with a bachelor's degree in accounting.

The career: Worked at Industrial Indemnity Financial Corp., serving as executive vice president from 1986-1991. Joined Aetna Insurance Co. as vice president, 1979-1986. Served as Smyth Manufacturing Co.'s president and CEO between 1972 and 1976. Joined Arthur Andersen & Co. as audit manager from 1966-1972. Served as U.S. Army finance officer from 1964-66.

Accomplishments: 'Being missed by my staff when I'm out of town.'

Chris Bluemer is Fireman's Mr. Fixit

CONTINUED FROM PAGE 133

Payoffs from outsourcing

The insurance business is the second largest user of computer capacity, after the Department of Defense, so there's a tremendous ability to use an asset of technology.

We take the position that we outsource anything we can, except dealing with the sales agents. All of our outsource contracts are long-term. We get more effective control by leveraging outsourcing companies.

[Outsourcing] gives us the ability to unplug, to unbundle automobile services from the rest of the business. Outsourcing has increased our capacity to use people. If we had to start from scratch and build a technology organization, we'd oeed 200 people. We've been able to hitch rides very quickly, with limited capital.

Fear of outsourcing

The informatioo officer who says "I doo't like outsourcing" ought to just feel his shirt and ask: "Who made this for me?" His quality of life has been enhanced by outsourcing. He does it every day.

Maybe the IS person ought to look at it this way: You're in charge of the business of informatioo. Your customer may have found a source outside of your monopoly. The first source outside the monopoly was the personal computer. Now he's finding other vendors out there who have excess capacity, which you may oot have had yesterday, but if you don't watch out, you will have tomorrow.

What are you doing about that? How are you planning to use your potential future excess capacity? Maybe you doo't have to use it. Maybe it's been funded and paid for and you can just let it sit and gather dust and work in a downsized arena. Is being big important? Can you spin off some of that capacity and help other companies?

I give to my officers a little card that has a saying by Aesop. It says: "Be wary. Do not lose the substance by grasping at the shadows."



Rod Morgan

Bluemer asks: *'Your customer may have found a source outside your monopoly. What are you doing about that?'*

Changing role of IS

The information systems professional has been a monopoly. He was encouraged to be the monopoly, he was told to be the monopoly, he was funded to be the moopoly.

They didn't let you in; they're in there talking about halon or whatever. Invisible shield. And 1990s are saying, "No no no oo, that's the Soviet Union. We've got to break you into economies." And [IS people] are scared.

The informatioo officer in my business, and probably in a lot of businesses, has a tremendous ability to impact cost and analyze potential problems before they occur.

And maybe he should devote some time to understanding them and ask: "What are the opportunities to provide better service in my organization? Can I help the controller function the financial plan? Can I help the strategic planning function? Can I ideotify problems with my database before they exist? Can I, in the positive sense, be the central intelligence operation?"

What got you here may not be what gets you into tomorrow.

Bluemer's rules

The following are guidelines for dealing with outsourcing vendors and other humans, according to Chris Bluemer:

1) Ask only those questions that need answers.
2) Insist on getting answers to the questions you ask.
3) Ask for short follow-up times. These lend to positive reactions.
4) Make every answer a 10-second answer.
5) Keep the data honest.
6) Forgive mistakes. When someone errs, give him a can of Coca-Cola. Bluemer says it's a positive reminder that even though a mistake was made, the fix can be unexpectedly great.
7) Use the "Art Linkletter approach." Ask outsourcing vendors: "What would you ask if you were me?"
8) Don't guess when you can avoid it.

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IS advancement
Information officers will succeed as senior managers when they promote themselves as businessmen who have a background in information processing and information technology.

An information officer can't say, "Look at me! Look at me! Look at me! I'm really senior management." Yes, they are recognized at many companies as one of them.

But I think [IS people] have the same dilemma that accountants have as bean counters. They have the same dilemma that human resources people have, and they're all talked about as touchy-feelies.

But human resources officers make it to the top. Accountants make it to the top; actuaries and lawyers make it to the top.

I think information officers that are perceived as good businessmen will make it to the top.

User relations
Information officers are human beings. They aren't as appreciated as they should be, and as a result, they become whipping boys and they become very defensive. They've been trained to do that and they've accepted that as their way of life. But we're in a different era.

Users can't be jerking the chain of the computer people. Clearly, information officers have had to suffer. People say, "You're the keeper of the keeper of the information. Give me my stuff." But it works both ways.

A lot of IS problems may come from inherited adverse relationships, and they ain't going away until you folks start taking out the trash. Success comes down to good human relations.

> INFORMATION OFFICERS ARE human beings. They aren't as appreciated as they should be, and as a result, they become whipping boys and they become very defensive.

IS ethics
Electronic mail is great until you realize that somebody out there has a copy of everything that went on it.

Why? Didn't business learn with Nixon and the Watergate tapes that's not smart to do, even if now and then you ferret out somebody who's using electronic mail for improper use?

If the [IS person] is perceived as being the person who captures data and he's the KGB of the company, he's not going to be accepted into the senior management ranks because he's the guy who knows all the dirt.

If he's perceived as the guy who has the information and keeps it honestly and allows people the educational ability to format it, then I think the road to acceptance is a lot better.

Personal technology use
When I lived in California, I had a PC at home. The application I had on it was my wine collection. It was something I used. I didn't want to crawl around in the cellar, so I put [the information] in the computer.

In the office, basically the information that I need to run the business for me today as president is not so much computer-driven as people-driven. I answer the phone. I open the mail.

We generate these newsletters to the field agents on the PS/2. We just started using a fax modem network to send them out.

Advice
Lighten up, information officers.

EXECUTIVE TRACK



Deborah A. Coleman, vice president of information systems and technology at **Apple Computer, Inc.** in Cupertino, Calif., announced her intention to leave the post effective Nov. 1. She has held numerous senior positions at Apple since 1981.

.....

Bud Howey, 39, was named senior vice president and chief information officer at New York-based **Sony Music Entertainment**, a unit of Tokyo-based Sony Corp. Howey comes to his newly minted position from **Price Waterhouse**, where he was a partner in the management consultant group.

.....

James Zucco has been appointed to the newly created position of senior vice president of future network and systems architecture at Washington, D.C.-based **MCI Communications Corp.** An eight-year veteran of the $9.5 billion telecommunications player, Zucco formerly served as vice president of advanced product development in the systems engineering organization.

.....



In Strongsville, Ohio, **Mark S. Fleishour** has been promoted to the position of director of MIS development at **Central Reserve Life Insurance Co.**

Fleishour joined the small business-oriented accident and health insurance company in 1990 as manager of MIS development; at his new position, he will be responsible for developing and implementing the company's computing strategy.

.....



Also on the rise at Central Reserve is **Phil Hodge**, who moves from director of MIS to assistant vice president of MIS. His responsibilities include development and maintenance of all corporate information processing systems, user computing and field computing.



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Gurus offer pearls for IS pilgrims

Drucker: Focus on data, not automation

BY NELL MARGOLIS
CW STAFF

UNIVERSAL CITY, Calif. — If you are among the many information systems leaders who believe information is your job, corporate management guru Peter Drucker has a couple of words for you: You're wrong.

"Most of you mistakenly think information is your job, but your job is data," the noted author and Claremont Graduate School professor told the 500 people gathered last week for the Society for Information Management's annual conference. "Information is the user's job — you can only provide the raw material.

"The problem," he added, "is most users also believe that information is the IS manager's job."

This role confusion, Drucker said, is one of several key misperceptions shackling U.S. companies competively — and a major reason why firms spending an estimated 35% to 40% of their capital budgets on information technology are getting minibang for their megabucks.



Drucker advises: *'Put emphasis on how to make your output, not your people, more productive'*

According to Drucker, driving true productivity may require the IS leader to shift gears. "Put emphasis on how to make your output, not your people, more productive," he advised.

Asking the right questions

Helping users ask the right questions, he continued, is a giant step in the right direction. "Too few ask or answer, accurately, the question 'What information do I need?' A computer printout isn't it." Even fewer pose the follow-up query: "What information do I owe?"

He suggested a third critical question: "What information does this whole organization need? And the moment you ask it, you're up against a very unpalatable discovery: 99% of it doesn't come out of the information system. Most of what the company needs comes from outside."

So does most of the future customer base, Drucker pointed out: "The great weakness — and you [IS directors] aggravate it, my good friends — is that most businesses concentrate on their customers. But 70% of your potential customers don't shop with you, don't bank with you, don't buy from you — and this 70% is your future."

Building up productivity also involves paring down. "Always ask, what can we simplify? What can we abandon? Do we really have to do this? And if so, do we have to do it in such magnitude?" The answer to the latter, he added, is frequently no.

"Total inventory control is madness," Drucker said. "With small samples, you have control. Beyond that, you have paper."

The commonsense themes that marked Drucker's address echoed as well in the words of others who took the stage at the three-day conference, aimed at focusing IS leaders on competing through technology.

Software reuse. "We've had the technology for reuse for about 20 years," said Vaughan Merlyn, a partner at Ernst & Young's Center for Information Technology and Strategy. He disagreed with the suggestion that productivity gains through reusable software are being stymied by technological shortfalls.

"What we don't have is the methodology or psychology needed to make reuse viable." Will we get the 180-degree turnaround in corporate culture that Merlyn sees as a prerequisite to such unglamorous, pragmatic approaches as reuse?

"Absolutely," he said. "The places where we see the most interest are IS shops that think they're about to be outsourced. It's amazing what the urge to survive will motivate."

Total quality management won overwhelming endorsement as a necessary means to productive ends — but don't dive in indiscriminately, cautioned Susan Swenson, PacTel Cellular's president and chief operating officer.

"Tailor your program to your own corporate culture," she advised. "The worst thing you can do is just take what some other company is doing and overlay it on your own." And, "if you don't have the whole team together, don't do it," Swenson warned. "You need complete buy-in, or it can be a complete disaster."

Thurow: Build fast, nimble teams

BY JOSEPH MAGLITTA
CW STAFF

BOCA RATON, Fla. — Chief information officers take heed: Information systems organizations seen more as ballast than sails for their corporations face unprecedented danger of being heaved overboard.

That was the quiet warning sounded to 600 or so IS professionals at the seaside "CIO Perspectives" conference earlier this month.

While approaches and advice differed, the two dozen or so speakers agreed that technology organizations must find better ways to become relevant — and fast — or risk going down again.

"We need to put IT back on the radar screen," said DuWayne J. Peterson, an independent consultant who chaired a blue-ribbon panel trying to develop a new model for IS.

Solutions offered at the three-day event ranged from re-engineering, open systems, Machiavellian politics, building a corporate architecture and implementing client/server.

Here's a rundown of key speakers and their ideas:



David Leifer

Thurow warns: *'You haven't seen anything yet'*

Lester Thurow, dean of MIT's Sloan School of Management and best-selling author of "Head to Head: The Coming Economic Battle Among Japan, Europe and America."
IS managers in U.S. firms would do well to learn European-style football (soccer), Thurow advised.

Unlike American football, he noted, soccer encourages nonstop, fast-paced team play needed to beat strong European and Japanese foes in machine tools, biotech, aviation, software, microelectronics and other key industries.

Noting that "technology has turned the get-rich game into a very different game," Thurow predicted that short-sighted, individualistic nations, companies and departments are doomed to fail in the next decade.

"If you think you live in a competitive world now, you haven't seen anything," Thurow added.

DuWayne J. Peterson, chairman, DuWayne J. Peterson Associates.
Merrill Lynch & Co.'s former "million-dollar man" presided over the first public debate of the new "Power Station" model unveiled last spring. The project's goal, he explained, is to find new ways of pulling technology into the mainstream of business and to close what Peterson called "the gap between [IS] credibility and performance."

The basic idea: Create a tight spiral between computing and customer know-how with business processes, systems, organizations and tools.

The bottom line, developers said, is that IS departments must move from being reactive penny-pinchers to become a proactive, need-driven force intimately intertwined with the business.

Easier said than done, according to panel members from American Express Travel Related Services Co., United Services Automobile Association, Booz Allen & Hamilton, Inc. and others who debated the model. Reaction among IS attendees appeared lukewarm; Peterson conceded that more work was needed and promised a fuller development by next spring's conference.

Douglas A. Nagan, president, International Resource Management, a consulting and outsourcing company.
Re-engineering is doomed to fail unless IS masters the political dimensions of managing change, according to Nagan, a former CIO at publisher John Wiley & Sons, Inc. who now heads a consulting and outsourcing company.

"There are not going to be any supporters for cutting costs and improving performance," he observed.

To help sharpen political skills, IS chiefs would do well to read Niccolo Machiavelli's classic, *The Prince*, Nagan said. Such basic tactics as enlisting help even if it is not needed, identifying foes and supporters and avoiding battles wherever possible can help change efforts, he said.

"We have more technology than we could possibly use," Nagan said. "If you're going to re-engineer, you need to look beyond what's on paper and see how things really work."

CALENDAR

NOV. 8-14

MacIS '92 Conference. New Orleans, Nov. 8-11 — Contact: Managing Apple Computers in Information Systems, Chicago, Ill. (312) 644-6610.

Share '92. Tampa, Fla., Nov. 8-11 — Contact: Share Headquarters, Chicago, Ill. (312) 644-6610.

James Martin World Seminar with Dr. Carma McClure's Corporate CASE Tutorial. New York, Nov. 9-13 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090

Synergy '92. Anaheim, Calif., Nov. 9-13 — Contact: Weingarten Publications, Inc., Boston, Mass. (617) 542-0146

U.S. Society of Wang Users (USSWU). Boston, Nov. 9-13 — Contact: USSWU, Chicago, Ill. (708) 652-3888

Autofact '92. Detroit, Nov. 10-12 — Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500

Society of Motion Picture and Television Conference and Equipment Exhibit. Toronto, Nov. 10-13 — Contact: Technology Solutions, New York, N.Y. (212) 505-9900

Voice '92. Atlanta, Ga., Nov. 10-13 — Contact: Voice '92, Houston, Texas (713) 974-6637

Virus Research Conference. Washington, D.C., Nov. 11-13 — Contact: Virus Research, International Computer Security Association, Washington, D.C. (202) 364-8252

Twelfth Annual Eastern American NCR/AT&T Computer Users Conference. Lake Harmony, Pa., Nov. 12-13 — Contact: Frank Whalen, Titmus Olsen Testing Machine Co., Willow Grove, Pa. (215) 675-7104, Ext. 216.

NOV. 15-21

Guide's 1992 Conference. Atlanta, Nov. 15-20 — Contact: Guide International Corp., Chicago, Ill. (312) 644-6610.

Information Industry Association 1992 Annual Conference: 'Knocking Down Info Walls.' San Francisco, Nov. 15-19 — Contact: Information Industry Association, Washington, D.C. (202) 639-8262.

Troubleshooting, Maintaining, Upgrading PCs Seminar. Fort Lauderdale, Fla., Nov. 16-17 — Contact: Quest, Spotswood, N.J. (908) 251-3217.

19th Annual Computer Security Conference and Exhibition. Chicago, Nov. 16-18 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2200

C++ World Users Conference. New Jersey, Nov. 16-20 — Contact: C++ World, New York, N.Y. (212) 274-9135.

Comdex/Fall '92. Las Vegas, Nov. 16-20 — Contact: Comdex/Fall, The Interface Group, Needham, Mass. (617) 449-6600.

ISDN/Broadband '92. Reston, Va., Nov. 16-20 — Contact: Information Gatekeepers, Inc., Boston, Mass. (617) 232-3111.

Transaction Processing Networks Conference. Washington, D.C., Nov. 17-18 — Contact: Telecommunications Reports, Conference Dept., Washington, D.C. (202) 842-0520.

Unicom '93. Washington, D.C., Nov. 17-19 — Contact: North American Telecommunications Association, Washington, D.C. (202) 296-9800

Conforum. Orlando, Fla., Nov. 19-20 — Contact: Conforum, Chicago, Ill. (312) 938-3500.

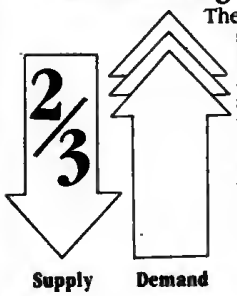
A few important tips on recruiting computer professionals

Finding computer talent isn't as easy as it used to be. In fact, there was a time when you'd just run an ad in the local newspaper and you could make a hire without waiting too long or spending too much.

But times have changed. And like so many facets of today's business, so has the effectiveness of traditional recruiting methods.

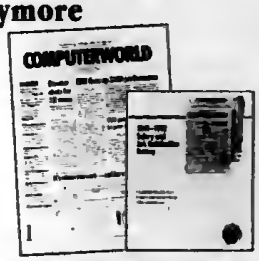
What's more, many of today's recruiters *don't use* today's most efficient methods — methods that save time and money for some widely.unknown reasons.

The supply of qualified professionals isn't meeting demand



The American Council on Education reports that the number of college students choosing computer careers is down two-thirds since 1982. To make matters worse, there are more computers in today's business that require the skills of this shrinking market than ever before. And while you may never consider the company next door your competitor, it likely *is* competing for the same computer talent today. The result is a classic supply/demand problem that isn't changing for the better -and that's sure to make your recruiting tougher in the '90s.

Ads in local papers don't reach your major hiring market anymore



That's because they generally reach "active" job seekers — those who actively seek out the local newspaper to find jobs — and who a recent *Computerworld* job satisfaction survey found to represent 2 in 10 of today's computer professionals. The study also found that 7 in 10 of today's computer professionals are "passive" job seekers — those who would *consider* new job options, but likely never look for them in the local newspaper. (The remaining small percentage are "non-movers" content with long-term jobs.)

For every 10 of today's computer job seekers . . .
2 are Active
7 are Passive
1 is a Non-mover

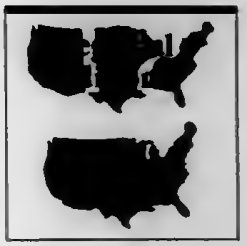
In short, this means that your ad in today's local newspaper reaches no more than 20 percent of today's computer job seekers. What's worse, if you're not using other vehicles that reach far more job seekers, your local newspaper expenses are as inefficient as their limited audience.

More job seekers see your ad in Computerworld than in any other newspaper — Sunday, daily, or trade

That's because *Computerworld* reaches over 629,000 qualified computer professionals every week — the largest audience of its kind, and one that's rich with passive and active job seekers.

That's why more companies advertise more jobs in *Computerworld* than in any other professional newspaper. And why *Computerworld* is the *single place* where America's computer professionals *expect* to see the most jobs every week.

Computerworld gives you regional editions



A key option when you need a regional candidate and want to avoid national response and relocation. Yet if your search is national in scope, *Computerworld* can also give you more widespread national exposure than any other source.

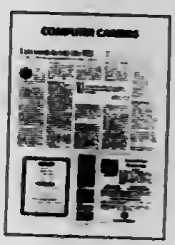
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That's comparable to most local newspapers. And why your ad can quickly appear in the next issue to start generating quality response.

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And with a regional rate of just $182.95 per inch, your cost-per qualified candidate reached is better than any newspaper - Sunday, daily or trade. Or just about any other source, for that matter.

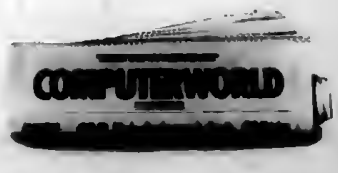
Computerworld leads candidates to your ad



Just look at this week's Computer Careers section. You'll find a career editorial topic that will stir the interest of virtually any computer job seeker — passive *or* active. It's just one of countless reasons *Computerworld* is America's newspaper of choice on computing. No matter how much the times change.

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Mainframe programmers look to avoid fate of the dinosaur

FIRST PERSON

BY WILLIAM R. ROUZER
SPECIAL TO CW



For the past two years, I have been "underemployed." I managed to work 10 months last year as a programmer converting systems from a CDC Cyber 830 (a machine I'd never seen before) to an IBM 4381 running MVS. But, for the past year, I've been totally unemployed.

I've become part of a growing and expendable population of "mainframe dinosaurs."

Five years ago, an associate and I were discussing the cost-per-MIPS ratio between mainframes and micros. It was obvious that if I wanted to stay in a profession I loved despite the politics and frustrations, I would have to learn to program micros and how to fit them into an information management strategy.

I've learned C, C++ and Pascal. I program under both Microsoft Corp.'s DOS and Windows. None of my prior employers required these skills or appreciated that they might soon need them, and I have no "paid experience" using these languages so I can't get anyone to hire me.

Thankfully, things weren't quite this bad when I was starting out. My first programming job was in 1980. I had learned Basic and Fortran at night school but had to learn Cobol for this job. My employer told me that I was on probation and if I could learn GCOS and Cobol in 90 days, I could keep the job. I managed that with no problems.

With more than a decade in the field I thought I was past the "no experience, no job, no experience" paradox. I guess paradoxes are eternal.

We are trainable

There are so many of us dusty, worthless dinosaurs out here that human resources departments are really being tough. They're being so particular that they're saying things such as "must have C++ and object-oriented programming experience." The pounding of countless rejections has made me so punchy that the first time I read that sentence, I took it seriously.

I know I can do the job, and I know these firms are spending more money recruiting people than they'd spend paying me for the few days it would take me to come up to speed. In a fit of frustration, I once told that to a headhunter in New York, who then castigated me for my attitude. That's a problem with programmers: We tend to be logical.

Sometimes I soothe my fears by telling myself I'm not alone. Many programmers I know are unemployed, fearful for their jobs or getting stressed out because of all the extra work they've been doing since their firm "rightsized." Being logical people, they're somewhat bemused by the apparent contradiction between having been "rightsized" and their current work load. But they're tenacious; they'll eventually figure it out. I just hope they rationalize it before this new paradox blows their logic circuits.

Speaking of logical contradictions, do you remember a survey that *Computerworld* ran last year [CW, Sept. 9, 1991] in which "data processing professionals" reported they were being worked hard but "underutilized." I pray I'm not the only one who thought about that!

Programming gave me pride and made me a good living. New applications and problems held my interest.

But I could have done a better job, a more comprehensive job, if it weren't for time constraints and financial (or political) considerations.

Users often used the phrase "quick and dirty" to describe what they wanted. Quick and dirty was usually what I gave them, albeit reluctantly. My managers often didn't have the time to listen to my reasoning that although what the user wanted was really simple, he didn't fully appreciate what the technology and our data structures allowed.



Michael Siggins

The user was usually happy for the moment with what information systems gave him but he would come back later, usually within a few months to a year, with a new request that could have been easily anticipated (and cost less) in the original design.

As time passed, these requests became backlogged. With significant frequency, different users would make requests that were mutually exclusive or repetitious of requests that had been made before (and never done). In a manner of speaking, we'd painted ourselves into a corner.

Enhanced for the user

On occasion I overstepped myself. I enhanced systems beyond the user's requirements because, having watched how the user worked and what he did, I just knew one little "extra" would make the system more flexible and/or the user more productive.

These systems, as it turned out, were my "master works." They worked, saved money and made people more productive. Users loved them. Ironically, they also earned me a reputation as a "loose cannon."

So I became a chastened programmer. I'm too old to risk it anymore. This makes me sad because I really loved watching users' hands flash across their keyboards and their faces light up when they saw what they could do with a new tool we created.

Rouzer is a programmer/analyst with 11 years of experience in government agencies and direct marketing firms. He lives in Chula Vista, Calif.

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Do research to justify need of AS/400



Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Steven B. Fogle, a managing director at The Alexander Group, an executive search firm with offices in San Francisco and Houston.

Q I work at a small business with a System/36 that we've had for seven years. I feel my computer talents are becoming very stagnant. How do I persuade upper management to upgrade to an Application System/400?

A Persuading management to make a significant investment will take research, analysis and sometimes pressure from you and your company's competition. Survey businesses of similar size in the industry to learn more about their current systems and future plans. This will be valuable information in educating your company management. You need to prove that an investment in an AS/400 will improve the way your company does business.

Q I'm a director of computer services who has 10 years of experience with an IBM System/36 and 30 years' experience in the health care field. I don't program or do the concentrated work of a computer specialist, but I'd like to be a director/coordinator/manager of a health-related computer environment. Where do I start?

A Contact all of the health care organizations in your area and introduce yourself to the senior information systems executive. Agencies are not always the answer to changing jobs, especially when you have specific interests. Ask your peers how they best see your skills utilized. Hospitals, managed-care organizations and numerous other health service organizations need talented, experienced IS managers.

FAST TRACK
CAREER ADVICE FOR THE '90s

Q I am a programmer with seven years' experience, which includes Basic, Cobol and Oracle on DEC/VAX and Sun/Unix. I can't stand graphics and graphical user interfaces, but I love programming. Will there be a place for my programming skills where I won't have to do graphics?

A Talented, flexible programmers are and will be in great demand for years to come. I suggest you gain as broad experience as possible in your field so that you can change as the industry changes. Graphics experience is valuable, but by no means is it exclusive to the needs of large IS environments. Successful programmers who aren't interested in the management track are needed in most companies.

Q I have been involved in data processing since 1986. I have worked on various platforms (IBM, VAX, Prime), coding in Cobol and Natural Adabas. While IBM is using Natural Version 2.1 or 2.2 in the real world, our VAX is running on Natural 1.4. How can I get potential employers to look at me after they realize my Natural background is not the version they are running?

A Remember that employers are also interested in the *individual* they hire, along with his technical skills. Continue pursuing any opportunities that come your way and present yourself as flexible, intelligent and able to develop and enhance your development skills quickly. Also, continue your education to acquire development skills for future career growth.

Sure that you're being undervalued? Stressed out? Feeling discriminated against? We want to hear about these and other issues that affect your career. Call your questions in using the Fast Track line at (508) 820-8522, or send them by fax to Kelly E. Sewell at (508) 875-8931. If we use your question, we'll send you a gift.

What to do when a project you've been working on for six months gets canceled

➤ Go to the department head of the user group the project was for and rally his support. Or cut your losses and take a look at the technology developed for that project and see where else in the company it might be applied. It depends on why it was canceled. If it was going to cost more than what management thought its value was, I wouldn't try to override management.

Mike Cunningham, MIS supervisor
The Dr. Pepper/Seven-Up Cos., Dallas

➤ First ask why the project was canceled and what are the reasons — basically just for your personal understanding. Then try to focus on what you have learned and the experience you have gained that you could apply to the next project. If you feel the project is worth fighting for and could see it would benefit the company in the long term, try to persuade management to continue with the project.

Tony Nation, programmer
Mirage Resorts, Inc., Las Vegas

➤ We try to anticipate when it might happen, but when we can't, we try to get the project reinstated or scale it back. If there were multiple people on the project, we try to reposition them in other places in the company. Obviously, it's disappointing, but it happens a lot.

Amy Lutz, senior consultant
Integrated Systems Consulting Group
Wayne, Pa.

➤ There's always a project backlog. Just move on to the next item of priority. These things are really the dictates of management because management sets priorities. So if they cancel a project, you have to assume it's because the next project in sequence is a higher priority.

Ray Proctor, manager of distributed systems
Dow Jones & Co., Chicopee, Mass.

Compiled by Leslie Goff, a free-lance writer based in New York.

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The South Florida Water Management District is a regional agency headquartered in West Palm Beach, FL, responsible for the environmentally sound administration of surface and groundwater resources in South Florida, encompassing 16 counties and five million people. We are currently seeking experienced professionals to perform a variety of software application tasks including software development, systems analysis, application implementation and software maintenance.

A minimum of a Bachelor's degree in Computer Science and two years of demonstrated applications/analysis experience required. Experience with VAX/VMS and/or UNIX operating systems, Oracle database and C, COBOL or FORTRAN programming also required. One position requires experience with American Management Systems' Local Government Financial System (LGFS) or ROSS System in a DEC environment.

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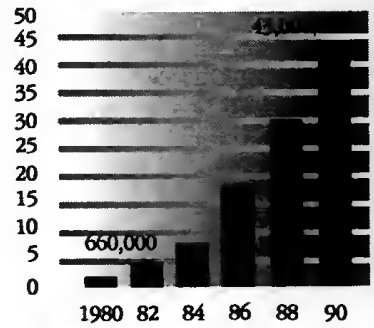
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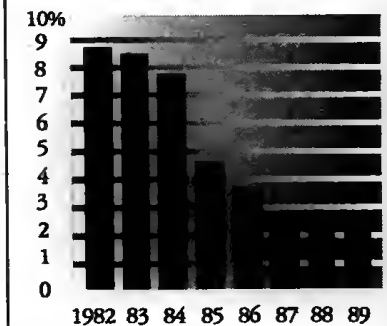
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MARKETPLACE

Avoiding PC purchase scams

BY TODD HENSCHELL
SPECIAL TO CW



Cheap sub-ins, bait-and-switch tricks, misleading advertising — you name it and I've seen it while buying and selling PCs for my clients. Although it is impossible to stay on top of every unethical practice, you can become more familiar with them. And while the dirty dealers are in the minority, your chances of detection are better if you treat every purchase like a used car: Kick the tires and look under the hood.

Good as new?



■ On system orders where an enhanced small device interface (ESDI) disk is installed, some value-added resellers will ship systems with "refurbished" hard disks.

While this is not illegal, prices on remanufactured drives are 15% or so lower than new drives, and those cost savings are not passed on to the buyer.

To ensure that you're getting what you pay for, it's best to have the vendor stipulate on the invoice that all components used are new and guaranteed as such.

ESDI drives are a particular target because of their scarcity; manufacturers are phasing them out as they change their production lines over to Small Computer Systems Interface and more common integrated drive electronics types of drives.

Hacking for profit

■ To get around licensing (and paying royalties for) BIOS firmware, certain clone manufacturers are making their own BIOS chips. This doesn't harm the computer or its operation, but in the course of hiding this, these manufacturers may alter the code in the read-only memory (ROM) just enough to prevent the end user from finding out which revision it is.

One of the tell-tale signs of a hacked BIOS chip is a "zeroed" out revision number. The system may boot and report a BIOS type that is uncommon, and the revision number may be all zeros.

If you need a BIOS upgrade to run OS/2, for instance, there's no easy way to determine what you have. If you've purchased a system ROM with a blanked revision number, you've bought bogus firmware.

Henschell is a PC consultant and free-lance writer based in Burbank, Calif.

Come across any questionable selling practices? We want to hear about them. Call in your experiences to Jodie Naze at (800) 343-6474 x727 or fax them to (508) 875-8931.

The bait-and-switch trick

■ An old practice among unscrupulous wholesalers is to pass off a cheaper, slower chip for a faster, more expensive one. To conceal the chip switch, these vendors cover the CPU with a heat sink — a cast metal piece with fins used to absorb and radiate heat. Then, they either install a faster oscillator crystal and drive the CPU at a speed faster than its rated speed, or they try to pass off the DX/2 50-MHz chip as a full 50-MHz DX.

When the heat sink is bonded with epoxy, it's impossible to determine anything about the processor. Vendors attempting this fraud will also usually place a sticker or other notice on the heat sink or edge of the CPU, stating that removal of the heat sink will void the warranty.

Don't buy a system unless you can read the silk screen on the CPU, which should state the manufacturer, the chip type and the clock speed of the chip.

Offshore chips

■ Poor quality control in offshore facilities has resulted in high failure rates in some low-priced 1M-byte by three-chip single in-line memory modules (SIMM). These fail about two to three times more often than the nine-chip type. You pay about $10 less for the cheaper modules, but the question is whether your company can tolerate a higher downtime potential.

The cheaper SIMMs also fail some tests at their rated access speed and will cause parity errors on systems that rely on speed accuracy.

What's in a name?



■ Just because it says "name-brand video board" doesn't mean it is. Some clone manufacturers purchase chip sets from the mainstream video board builders and then assemble a lesser quality board with them.

When these boards are used with DOS, it's rarely a problem. However, for Microsoft Corp.'s Windows and OS/2 users, who often need new and bug-fixed video drivers, there could be trouble getting usable display drivers.

To know whether your system has a genuine name-brand video board in it, check to see if the system includes a manual for the board and the original driver disks from the board manufacturer. If the system doesn't have these, driver headaches might be coming your way.

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PS/2 Model 60	$600	$550
PS/2 Model P70	$1,650	$1,350
PS/2 Model 80	$1,200	$1,250
PS/2 Model 90	$3,100	$3,000
Compaq Portable II	$425	$450
Portable III	$500	$500
Portable 386	$950	$975
SLT-286	$700	$700
LTE-286	$800	$800
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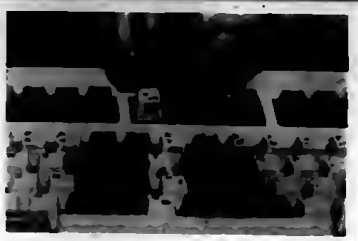


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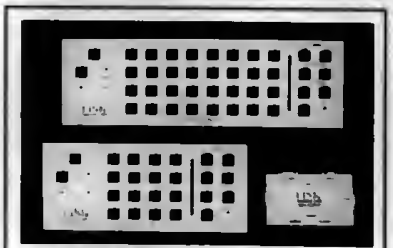


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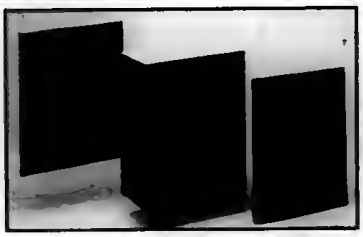
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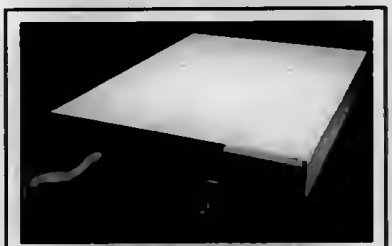


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U.S. Department of Defense 6
U.S. Naval Academy 50
U.S. Postal Service 16
USG Annuity and Life 47

V

Verity, Inc. 108
Versant Object Technology, Inc. 28,122
ViewStar Corp. 112

W

Wall Data, Inc. 119
Wang Laboratories, Inc. 16,112
Weil, Gotshal and Manges 47
Wellfleet Communications, Inc. 73,85,153
Western Provident Association 112
Weyerhaeuser Co. 24
Windows Users Group Network. 24
WorkGroup Technologies, Inc. 8

Z

Zenith Data Systems 8

Bear facts

Selected semiconductor companies rated by Bear, Stearns & Co.

	Rating
Advanced Micro Devices, Inc.	Hold
Chips and Technologies, Inc.	Avoid
Cypress Semiconductor Corp.	Hold
Intel Corp.	Buy
Motorola, Inc.	Hold
Western Digital Corp.	Avoid

Source: Brokerage firm reports

Industry Almanac

MINING BIG IRON FOR GOLD

With downsizing the hottest buzzword and IBM (IBM), Digital Equipment Corp. (DEC) and Cray Research, Inc. (CYR) all shaving their payrolls, prospects for the high end of the hardware industry may not seem bright. However, Wall Street looks favorably on several investment opportunities in large systems companies.

UNISYS CORP. (UIS)

William J. Milton Jr., a financial analyst at Brown Brothers Harriman & Co. in New York, said the Blue Bell, Pa., computer firm is a terrific investment opportunity. Unisys, which posted its fourth consecutive profitable quarter last week, is yielding a 16% dividend on its preferred stock, Milton said. Compare that with IBM's dividend, which is hovering around 7%.

Unisys shares closed at 8⅝ on the New York Stock Exchange Thursday. Unisys preferred stock stood at 35¾.

KENDALL SQUARE RESEARCH CORP.

Alex. Brown & Sons, Inc. tagged Kendall Square Research (KSRC) with a rating of Strong Buy. Kendall Square Research produces the massively parallel KSR1 system. In an Oct. 8 report by analysts Joseph Payne and Ellen Kempler, Alex. Brown cited growing market acceptance of parallel systems and the rapidly maturing KSR1 operating system technology as factors promising the company's continued growth.

The vendor's over-the-counter stock has been hovering around its 52-week low of 5½ recently; it closed Thursday at 7½. Kendall Square Research's initial public offering was in March 1992.

PYRAMID TECHNOLOGY CORP. (PYRD)

Pyramid Technology carried a Buy rating in an Oct. 16 report issued by Clifford Friedman and Neil Cooper at Bear, Stearns & Co. Pyramid Technology's restructuring charge of $22 million to $24 million in its fourth fiscal quarter will result in long-term savings of as much as $12 million per year. The company has also announced new systems and software products and a reseller agreement with Comdisco, Inc. (CDO).

Over-the-counter trading for Pyramid Technology closed Thursday at 8½.

DEREK SLATER

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, OCTOBER 23, 1992

TOP PERCENT GAINERS

Everex Systems Inc. (L)	85.81
Archive Corp	47.37
Wang Labs Inc. (b)	46.43
Zeos International Ltd	39.25
Symantec Corp	32.38
Fibronics Int'l Inc.	30.06
State of the Art	25.00
Ask Computer Systems	22.00

TOP PERCENT LOSERS

Proteon Inc.	-16.42
Spinnaker Software (L)	-16.16
Chipcom Corp	-16.13
IPL Systems Inc	-16.67
Ross Systems	-16.67
Conner Peripherals	-13.75
Quantum Corp	-10.32
Stratus Computer Inc. (L)	-9.50

TOP DOLLAR GAINERS

Progress Software Corp.	6.50
CompUSA Inc.	4.75
3M Corp	4.25
Intel Corp	3.88
Texas Instruments (H)	3.75
Intelligent Info. Systems (H)	3.63
System Software Assoc.	3.50
Archive Corp	3.38

TOP DOLLAR LOSERS

Chipcom Corp.	-4.13
Stratus Computer Inc. (L)	-3.63
American Info Techs Corp.	-3.38
Southwestern Bell Corp. (H)	-3.13
Conner Peripherals	-3.00
Nynex Corp.	-3.00
US West Inc.	-2.25
IPL Systems Inc.	-2.25

Exch	52-Week		Range	Oct. 23 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						**Up 1.92%**
OTC	19.13	8.63	3 COM Corp.	18.63	0.75	4.20
NYS	70.63	56.25	American Info Techs Corp.	65.25	-3.38	-4.92
NYS	45.38	32.88	AT&T	43.00	0.75	1.75
OTC	4.25	2.75	Ameri Communication Corp.	3.50	0.25	20.00
NYS	49.75	40.25	Bell Atlantic Corp.	46.13	-1.63	-3.40
NYS	56.50	43.88	Bellsouth Corp.	31.13	-1.50	-2.86
NYS	6.75	3.63	Bolt, Beranek & Newman	3.88	0.00	0.00
NYS	58.00	34.63	Cabletron Systems (H)	38.00	1.38	2.06
OTC	31.00	17.50	Chipcom Corp.	20.50	-4.13	-16.75
OTC	58.75	21.88	Cisco Systems Inc. (H)	58.50	1.63	2.88
OTC	35.25	6.50	Compression Labs Inc.	9.25	1.38	17.46
OTC	3.50	0.88	Data Switch Corp.	1.94	0.25	14.81
NYS	23.63	13.75	Digital Comm. Assoc. (L)	15.25	1.25	8.93
OTC	15.25	7.75	Digital Systems Int'l Inc.	8.63	0.13	1.47
OTC	15.63	3.63	DSC Communications (H)	14.50	0.88	6.42
OTC	10.88	4.75	Fibronics Int'l Inc.	7.25	1.50	26.09
OTC	37.50	10.50	Fluent Corp.	16.88	0.63	3.88
OTC	3.88	1.13	Gandalf Technologies Inc.	1.81	-0.06	-3.31
OTC	2.25	0.88	Gateway Communications	1.56	-0.06	-3.62
NYS	3.50	2.38	General Datacomm Inds.	3.88	-0.25	-6.06
ASE	5.88	0.50	Go Video	2.38	0.06	2.68
NYS	39.75	28.88	GTE Corp.	33.38	-1.00	-2.91
NYS	70.63	50.00	ITT Corp.	65.00	-0.75	-1.14
OTC	66.73	26.25	MCI Communications Corp. (H)	39.38	0.50	1.40
OTC	14.50	2.25	Microcom Inc.	3.38	0.38	12.50
NYS	18.25	9.50	Network Equipment Tech	12.25	-1.25	-9.26
OTC	25.50	6.00	Network General	14.50	0.00	0.00
OTC	50.00	8.50	Network Systems Corp.	13.00	0.25	1.96
OTC	25.79	5.63	Newbridge Networks Corp. (H)	25.75	1.00	4.40
NYS	68.25	56.75	Northern Telecom Ltd.	64.25	0.13	0.20
OTC	32.50	21.38	Novell Inc.	31.00	1.38	4.64
NYS	88.38	66.13	Nynex Corp.	82.25	-3.00	-3.52
OTC	37.50	14.50	Octel Communications Corp. (L)	18.00	0.00	0.00
OTC	6.88	3.38	Penril Data Comm. Ntwks. (L)	3.88	0.13	3.33
OTC	63.00	10.38	Picturetel Corp.	10.25	1.25	6.94
OTC	16.75	7.50	Proteon Inc.	7.75	-1.75	-18.42
NYS	29.50	13.63	Scientific Atlanta Inc.	28.75	1.25	4.50
NYS	70.50	56.75	Southwestern Bell Corp. (H)	65.63	-3.13	-4.55
NYS	28.38	20.75	Sprint Corp.	25.13	0.63	2.55
OTC	20.63	4.88	Standard Microsystems Corp. (H)	19.13	0.50	2.68
OTC	56.25	14.50	Synoptics Communications (H)	57.50	0.00	0.00
NYS	40.00	31.88	US West Inc.	36.75	-2.25	-5.77
OTC	50.50	24.00	Wellfleet Communications (H)	50.38	0.50	1.50
PC and Workstations						**Up 11.37%**
OTC	13.50	3.50	Advanced Logic Research	4.50	0.50	12.50
OTC	70.00	42.75	Apple Computer Inc.	44.75	4.25	10.51
OTC	24.50	11.25	AST Research Inc.	19.50	2.00	12.12
NYS	18.25	8.75	Commodore Int'l	7.38	-0.13	-1.67
NYS	42.38	22.13	Compaq Computer Corp. (H)	36.50	-0.25	-0.68
OTC	94.88	12.50	Dell Computer Corp. (H)	94.63	1.00	2.97
OTC	7.75	0.88	Everex Systems Inc. (L)	1.50	0.56	59.91
NYS	34.00	21.25	Harris Corp.	33.75	3.13	10.20
NYS	85.00	44.63	Hewlett-Packard Co.	85.13	-0.75	-1.34
NYS	25.75	14.13	Silicon Graphics	25.63	2.88	13.86
OTC	35.88	50.75	Sun Microsystems Inc.	32.00	3.00	10.34
NYS	31.25	22.25	Tandy Corp.	29.75	0.00	0.00
NYS	11.13	5.50	Zenith Electronics	5.88	0.13	2.17
OTC	25.50	2.75	Zeos International Ltd	4.88	1.38	39.25
Large Systems						**Off 0.14%**
ASE	20.63	7.75	Amdahl Corp.	7.88	0.00	0.00
NYS	18.38	4.75	Convex Computer	8.13	0.13	2.06
NYS	18.38	1.88	Cray Computer	3.50	-0.13	-3.45
NYS	52.25	19.50	Cray Research Inc. (L)	20.25	0.88	4.55
NYS	21.88	7.13	Data General Corp.	11.88	-0.38	-3.06
NYS	65.50	33.25	Digital Equipment Corp.	33.88	-0.50	-1.85
NYS	101.38	67.75	IBM (L)	68.00	-1.75	-2.47
OTC	13.25	5.50	Kendall Square Research	7.75	0.25	3.37
NYS	110.25	66.25	Matsushita Electronics	63.63	-1.13	-1.18
OTC	17.50	8.00	Pyramid Technology	8.00	0.75	8.06
OTC	17.88	9.88	Sequent Computer Sys.	18.63	0.13	0.81
OTC	16.38	2.75	Sequoia Systems Inc.	3.50	0.13	3.70
NYS	94.25	25.50	Stratus Computer Inc. (L)	33.38	-3.63	-9.50
NYS	13.13	8.50	Tandem Computers Inc.	11.13	-0.50	-4.30
NYS	11.75	3.63	Unisys Corp.	8.50	-0.25	-2.86
ASE	7.50	0.25	Wang Labs Inc. (b)	0.44	0.00	0.00
Software						**Up 6.23%**
OTC	88.50	25.25	Adobe Systems Inc.	50.50	1.88	6.55
OTC	44.25	10.25	Aldus Corp.	14.50	1.25	9.43
OTC	18.75	7.00	American Software Inc. (L)	8.13	0.25	3.17
OTC	50.00	9.75	Ask Computer Systems	16.63	3.00	22.00
OTC	53.00	23.25	Autodesk Inc. (H)	31.00	0.50	0.98
OTC	37.75	3.75	Blackman Info. Systems (L)	4.50	0.38	8.09
OTC	42.50	32.00	BGS Systems Inc.	37.50	0.00	0.00
OTC	75.00	37.25	BMC Software Inc.	58.38	-1.88	-3.11
OTC	50.50	10.75	Boole & Babbage	18.88	0.88	4.61
OTC	88.75	25.25	Borland Int'l Inc.	32.00	3.00	10.34
OTC	11.00	3.63	CE Software	4.00	0.13	3.23
ASE	24.00	8.88	Cheyenne Software Inc. (H)	24.00	2.25	10.34
OTC	17.00	5.63	Cognos Inc.	5.75	0.00	0.00
NYS	18.00	8.63	Computer Associates (H)	17.50	0.63	3.70
NYS	17.38	4.75	Computervision Corp. (L)	5.00	-0.13	-2.44
OTC	50.00	8.75	Comshare Inc.	9.00	1.25	16.13
OTC	47.88	6.00	Easel Corp. (L)	6.75	0.25	3.85
OTC	25.00	11.50	Group I Software	14.25	0.25	1.75
OTC	6.63	3.50	Hogan Systems Inc.	5.00	0.25	5.25
OTC	98.25	16.50	Information Resources	27.75	0.50	1.83
OTC	30.00	5.88	Informix Corp. (H)	27.38	0.13	0.46
OTC	23.38	11.50	Intergraph Corp.	13.00	-0.25	-1.89
OTC	16.00	7.00	Interleaf Inc.	11.75	1.13	10.58
OTC	20.25	10.25	Intersolv Inc.	16.75	2.00	14.55
OTC	21.38	8.50	Knowledgeware Inc.	12.00	1.50	14.29
OTC	46.25	28.75	Legent Corp.	63.13	-1.88	-4.17
OTC	38.75	14.75	Lotus Development	16.25	1.75	10.00
OTC	7.38	1.88	Mesa Software	2.75	0.25	10.00
OTC	22.25	5.25	Mentor Graphics	7.25	1.13	18.37
OTC	37.25	27.38	Micro Focus	30.63	0.63	1.74
OTC	50.50	6.38	Micrografx Inc.	8.50	0.25	3.03
OTC	88.75	56.50	Microsoft Corp. (H)	66.63	3.25	3.81
OTC	33.13	12.00	Oracle Corp. (H)	25.13	2.50	12.12
OTC	25.25	19.00	Parametric Technology (H)	45.50	-1.25	-2.46
OTC	11.00	3.50	Phoenix Technologies	4.50	0.13	2.86
OTC	25.25	11.25	Platinum Technology	16.25	2.00	12.31
OTC	53.00	29.00	Progress Software Corp.	63.00	6.50	13.88
OTC	19.63	4.06	Quarterdeck Office Sys.	8.73	0.75	13.00
OTC	32.75	11.75	Rainbow Technologies Inc.	22.00	1.50	7.32
OTC	22.75	4.00	Realcomp	3.75	-0.50	-8.00
OTC	17.25	8.00	Ross Systems	3.00	-1.00	-16.67
OTC	12.38	4.50	Sagenia USA Inc.	12.38	1.50	13.79
OTC	26.25	6.75	Software Publishing Corp.	8.38	0.88	11.67
OTC	6.50	2.00	Software Toolworks Inc.	3.38	-0.06	-1.83
OTC	7.25	0.73	Spinnaker Software (L)	1.13	-0.25	-18.18
OTC	19.63	3.25	State of the Art	6.25	1.25	25.00
NYS	25.25	13.73	Sterling Software Inc.	18.13	-0.25	-1.36
OTC	50.00	8.00	Struct. Dynamics Research	10.75	0.75	7.50
OTC	41.25	16.25	Sybase Inc. (H)	38.88	1.88	4.63
OTC	11.75	3.88	Symantec Corp.	11.75	2.38	32.38
NYS	13.50	3.25	Systems Center Inc.	7.00	0.75	12.00
OTC	34.25	13.00	System Software Assoc.	25.38	3.50	16.00
OTC	13.25	2.50	Trinzic Corp.	3.63	-0.25	-6.45
OTC	23.75	14.50	Walker Interactive Systems	19.00	2.63	16.03
OTC	6.63	1.50	Wonderlist	1.88	0.13	7.14
Semiconductors						**Up 7.85%**
NYS	21.50	7.38	Advanced Micro Devices	14.38	1.38	10.58
NYS	11.50	7.13	Analog Devices Inc.	11.50	1.25	12.20
OTC	13.13	6.75	Atmel Corp. (H)	12.75	0.38	3.03
OTC	14.13	3.25	Chips and Technologies	3.88	0.13	3.33
NYS	31.13	7.38	Cypress Semiconductor Corp	8.63	0.25	2.99
NYS	12.88	8.63	Dallas Semiconductor	12.38	0.38	3.13
OTC	82.38	39.75	Intel Corp.	67.13	3.50	5.50
NYS	9.88	4.88	LSI Logic Corp.	7.00	0.50	7.69
NYS	22.38	12.13	Micron Technology	19.25	1.25	6.94
NYS	97.38	57.50	Motorola Inc. (H)	95.25	1.13	1.20
NYS	13.13	4.88	National Semiconductor (H)	13.13	1.00	8.25
OTC	27.00	8.25	Sierra Semiconductor	13.25	1.75	15.22
NYS	48.75	26.00	Texas Instruments (H)	48.75	3.75	8.33
OTC	10.50	8.00	VLSI Technology	7.25	0.00	0.00
OTC	61.00	2.13	Weitek	3.13	1.63	46.43
ASE	8.75	2.00	Western Digital Corp. (H)	8.50	0.13	1.49
OTC	31.00	14.50	Xilinx (L)	17.50	1.50	9.38
OTC	33.00	13.75	Zilog Inc. (H)	50.25	-1.75	-8.47
Peripherals and Subsystems						**Up 3.25%**
OTC	10.50	3.25	Archive Corp.	10.50	3.38	47.37
OTC	25.75	13.75	Banctec Inc.	24.63	0.63	2.50
OTC	23.88	8.25	Cambex Corp. (L)	12.00	1.75	17.07
ASE	14.13	5.88	Cognitronics Corp. (H)	14.00	1.00	7.69
NYS	25.88	12.50	Conner Peripherals	18.75	-3.00	-13.75
OTC	15.88	14.25	Data Race Inc. (H)	14.50	-0.75	-4.92
ASE	18.88	4.72	Dataram Corp.	8.00	0.13	2.13
OTC	29.75	8.38	EMC Corp. (H)	22.88	0.63	2.81
OTC	8.38	4.75	Emulex Corp.	6.25	0.75	13.64
OTC	25.00	13.25	Evans & Sutherland	16.75	1.25	8.62
OTC	40.63	12.00	Exabyte	16.38	0.13	0.75
OTC	32.50	15.75	Intelligent Info. Systems (H)	32.50	3.63	12.55
OTC	11.25	4.75	Maynard Corp.	9.25	0.13	1.37
OTC	18.25	11.25	IPL Systems Inc.	11.25	-2.25	-16.67
OTC	21.25	16.75	Komag Inc.	18.25	1.50	8.88
OTC	18.63	4.38	Maxtor Corp. (H)	13.13	-1.50	-7.08
OTC	12.63	8.38	Micropolis Corp.	8.13	0.13	1.56
NYS	103.75	85.38	3M Co.	103.13	4.25	4.30
OTC	6.75	3.50	Printronix Inc.	3.00	0.25	3.28
NYS	24.38	8.88	QMS Inc.	9.13	0.25	3.17
OTC	18.00	8.88	Quantum Corp.	13.25	-1.63	-10.92
OTC	12.75	3.75	Radius Inc.	5.25	0.25	3.50
NYS	12.88	6.50	Recognition Equipment	11.50	1.00	10.00
OTC	13.13	3.63	Rexon Inc.	10.75	-0.38	-3.37
OTC	17.63	7.75	Seagate Technology	14.88	-0.88	-5.56
NYS	79.00	21.50	Storage Technology	25.50	0.88	3.56
NYS	23.88	16.00	Tektronix Inc.	21.13	0.63	3.06
NYS	82.25	50.25	Xerox Corp.	77.25	-1.13	-1.44
Services						**Up 2.42%**
OTC	20.88	11.88	American Mgmt. Systems (H)	50.88	0.75	3.75
NYS	5.38	2.88	Anacomp Inc.	3.50	-0.25	-6.67
OTC	50.50	12.50	Analysts Int'l (H)	50.00	0.25	1.27
NYS	68.00	35.75	Auto Data Processing	47.50	1.38	2.98
NYS	15.50	7.88	Candian Corp.	19.13	0.25	1.66
NYS	25.88	12.50	Comdisco Inc.	14.75	-0.38	-2.88
OTC	13.50	7.13	Computer Horizons	7.25	-0.50	-6.45
NYS	94.00	57.00	Computer Sciences	66.50	-1.75	-2.80
NYS	10.13	7.00	Computer Task Group	8.00	0.00	0.00
OTC	40.50	16.00	CompUSA Inc.	39.50	4.75	13.67
OTC	18.25	6.00	Corporate Software	10.63	0.88	8.97
OTC	20.75	7.75	Cyphernet Discount Software (L)	8.00	0.00	0.00
NYS	33.06	25.25	General Motors E (EDS)	28.63	-0.75	-2.55
OTC	30.38	9.38	Intelligent Electronics	11.75	-0.25	-2.08
OTC	14.88	3.88	Manset	8.00	1.00	12.50
OTC	15.75	7.00	Microage Inc.	8.00	0.00	0.00
OTC	85.00	17.66	Paychex (H)	35.00	1.50	4.48
NYS	77.00	54.75	Policy Management Sys. (H)	75.00	1.50	2.04
NYS	44.75	26.25	Reynolds and Reynolds	44.13	1.88	4.44
OTC	32.00	22.00	SHI Corp.	27.63	3.00	12.16
OTC	24.38	18.88	Shared Medical Systems	22.13	0.75	3.51
OTC	30.00	16.00	Sungard Data Systems	28.75	1.50	5.50
NYS	3.63	1.13	Ultimate Corp.	1.38	0.00	0.00

KEY: (H) = New annual high (L) = New annual low

* Companies tracked in Computerworld Stock Index

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IN BRIEF

Spinnaker stock dips

■ The resignation of **Spinnaker Software Corp.**'s independent auditor, **Deloitte & Touche**, triggered a drop in stock price from 1⅜ to 1⅛ in NASDAQ trading last Thursday. The week before, Chief Financial Officer E. Ronald Goldfuss had stepped down. He was replaced by Patrick J. Burns.

■ **Cray Research, Inc.**, whose quarterly profits were up while its profits were down from 1991, said it intends to save $50 million next year by mandating a companywide wage freeze, consolidating certain manufacturing operations and laying off 650 workers by Nov. 30. Top executives will also forego 1992 bonuses.

■ **Storage Technology Corp.**, which is due to deliver the Iceberg redundant arrays of inexpensive disks system in 1993, is using a hiring freeze to remain profitable and will cut salaries in January. Its third-quarter earnings dipped to $4.1 million, down from $24.4 million a year ago. Revenue of $387.1 million was nearly even with the $387.3 million of a year ago. Chief Executive Officer Ryal Poppa said deferred orders had placed additional stress on the $1.5 billion firm.

■ **Archive Corp.** revised its estimate of fiscal fourth-quarter revenue to $98.8 million, up from the Oct. 1 estimate of $97 million.

Short takes

Ottawa-based **Corel Systems Corp.** is offering 2 million common shares priced at $14.75 per share via a public offering in the U.S. ... Filing initial public offerings were **Networth, Inc.** (1.1 million shares at $14 to $16 each) and **Brookstrout Technology, Inc.** (1.6 million shares at $10 each) .... **Autodesk, Inc.** acquired **Micro Engineering Solutions, Inc.**, a developer of computer-aided design and manufacturing software.

Mainframe firms feel downsizing heat

As big iron heavyweights struggle to regain momentum, some PC software vendors are gaining

BY DEREK SLATER
CW STAFF

It is the heat, not the humidity. While mainframe vendors in particular blamed the economic climate for poor third-quarter showings, analysts said fiery competition from downsizing platforms and difficult business model transitions were the real culprits.

"Every company is feeling some effects of slow worldwide economic growth, but that's compounded by pretty massive secular issues for some companies," said Laura Conigliaro, a computer analyst at Prudential Securities, Inc.

Downsizing and the transition from DOS to Microsoft Corp.'s Windows environment are two key competitive issues that are buoying Microsoft and several mainframe productivity software vendors, while leaving some heavyweight mainframe hardware and PC application software vendors struggling to regain momentum.

Good times, bad times

Large systems software vendors stand to gain ground as those mainframe shops that are not downsizing seek to get the most they can out of installed hardware, often by upgrading and improving their software. For example, utilities vendor Boole & Babbage, Inc. expects to tally record revenue and profits for the quarter.

"In cycles where people are hesitant to buy big-ticket items, productivity-improving software seems to be where the dollars are going," said Terence Quinn, a senior technology analyst at Kidder, Peabody & Co. "The attitude seems to be, 'Let's make do with what we have.'"

Despite significant losses posted by IBM, Amdahl Corp. and Digital Equipment Corp., not all was bleak in the computer industry this quarter. Other hardware vendors, including Unisys Corp., Stratus Computer, Inc. and Compaq Computer Corp., managed good showings, as did a number of software firms such as Microsoft and networking suppliers such as Wellfleet Communications, Inc.

For IBM and DEC, profitability may not return in the next two quarters. Analysts were hesitant to pin down a specific time frame. "There are so many big variables, I'd rather just sit on the sidelines and watch how those variables play out," Conigliaro said.

With IBM's woes at the high end of the hardware spectrum, some of its future hopes rest ironically on the desktop, where the newly independent Personal Systems division — its liberation process behind it — may be able to compete more effectively in coming quarters.

Last week IBM Personal Computer Co. announced its Value-point line of low-cost products (see story page 8). Compaq's solid showing for the quarter proved that the strong can not only survive a price war but also flourish.

> "EVERY COMPANY IS feeling some effects of slow worldwide economic growth."
>
> LAURA CONIGLIARO
> PRUDENTIAL SECURITIES

A number of desktop applications vendors reported disappointing results as they grappled with their own set of competitive challenges.

Aside from Microsoft, which is uniquely positioned to take advantage of ongoing Windows market growth, tough times will likely continue for the PC software companies. "The last two quarters have [wreaked] carnage on the desktop," Quinn said.

Borland International, Inc., Software Publishing Corp., Lotus Development Corp. and other companies with entrenched DOS market share find Microsoft clawing at their heels as users move to Windows.

Difficult quarters still lie ahead for desktop software companies — particularly DOS-heavy applications vendors Software Publishing and Symantec Corp.

Bucking the trend

Quarterly results rolled in last week from all sectors of the industry. Networking companies reported the most consistently positive news, though other technology sectors had their share of glad tidings.

• **Unisys** continued its resurrection with its fourth consecutive profitable quarter. Revenue increased from $2 billion to $2.1 billion, while profits were $68 million compared to last year's loss of $76 million. Unisys also reduced its debt by $275 million, leaving the company with roughly $2 billion in debt — its lowest level since its establishment via a merger in 1986.

• **Amdahl** reported a $30.7 million loss, as anticipated. Revenue was up over 1991's third quarter. Amdahl sustained an operating loss and tacked on a $19 million pretax charge to cover layoffs.

• **Cray Research, Inc.** earned $6.5 million on $220 million in revenue. Revenue was up but profits were down from 1991, and Cray's recently announced restructuring will mean red ink for the fourth quarter.

• News was better for Hopkinton, Mass.-based **EMC Corp.**, a manufacturer of storage subsystems for midrange and mainframe systems. EMC revenue jumped 59% over the year-ago quarter to $94 million, cranking net income up 119% to $7.3 million.

• **Stratus** rode a new line of reduced instruction set computing-based products to increased revenue, which improved by 10% to $123.8 million. Profits were $14.9 million, up from $13.9 million last year.

• In the database market, **Sybase, Inc.** and **Informix Software, Inc.** chalked up strong results. Sybase pulled in $67 million in revenue, up 63%. Net income was $5.8 million, up over last year despite a charge for the acquisition of multimedia applications developer Gain Technology, Inc. Informix posted net income of $12 million, up from $5 million, and revenue of $68 million, up from $48 million.

• PC makers also fared well. The revitalized **Compaq** led the charge, with record revenue and solid profits (see story page 8). **Tandy Corp.** revenue rose 10.3% to $1.2 billion, with net income falling 23% to $32.1 million. **AST Research, Inc.** also showed increased revenue but lower profits, as did software company **Aldus Corp.**

• Profits with increased revenue came from networking companies **Network Equipment Technologies, Inc., Retix, General Datacom Industries, Inc., Chipcom Corp., Proteon, Inc.** and **NetFrame Systems, Inc.**

DEREK SLATER

Round 3

The third financial quarter left some high-tech giants battered and bowed, while others stood tall

Winners	Revenue	Profit	Notes
Apple	$1,770	$98	Spurred by PowerBook sales
Compaq	$1,067	$49	Record PC shipments
Stratus	$124	$15	Steady gains
Microsoft	$618	$209	Profits up 45% over Q3 1991
Informix	$68	$12	Profits up 58% over Q3 1991
Chipcom	$60	$6	Profits up 146% over Q3 1991
Losers	**Revenue**	**Loss**	**Notes**
IBM	$7,000	$2,780	Claimed market problem
DEC	$3,300	$261	Laying off 20,000 more employees
Amdahl	$589	$31	Laying off 9% of work force
Excel	$8	$3	Operating loss and Enfin acquisition
Mentor Graphics	$78	$46	Restructuring charges
RasterOps	$25	$4	Declining revenue

CW Chart: Janell Genovese

Wysiwyg

A DIFFERENT KIND OF RIGHTSIZING

The Boston Computer Society is holding its first demolition derby on Oct. 29 in Cambridge, Mass. For $5, participants get to take their frustrations out on old mainframes and minis by smashing them with a sledgehammer for five minutes. Proceeds go to the BCS Public Service Committee, whose volunteers help nonprofits with computer consulting.

ACHTUNG BABY

There's a new movie in Germany about the troubles the country is having teaching former East Germans how to turn on their computers. It's called DOS Boot.



KING 'IM

Marion Franklin Tinsley, the world checkers champion, beat the Chinook supercomputer in 15 out of 17 games.

OUR FAVORITE SAYINGS

Life's a batch

What kind of spool am I?

I think, therefore I LAN

Send in the clones

Pardon me, modem

Someday, my prints will come

BLOCK THAT METAPHOR

"Marilyn Quayle is more than Dan Quayle's wife; she is, to put it in terms that every computer user can understand, his back-up system, his fixed disk and (now) his spell-checker." —

From *Working Woman*, October 1992

Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Dix or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

◆

CW Chart: Michael Siggins

The 5th Wave



"THERE! THERE! I TELL YOU IT JUST MOVED AGAIN!"

INSIDE LINES

As the disk turns

Microsoft Executive Vice President Mike Maples and IBM's Colin Powell Sr., who oversees OS/2 technical development, faced off at last week's ITAA software conference. "Mike's boss did promise last spring that when we made 2 million [units] in sales, he'd have all the applications there," needled Powell, who noted that IBM — Microsoft's former OS/2 partner — was halfway there with one million OS/2 sales. Maples said a "relevant" number would be 500,000 daily users of OS/2. "The fact that someone sells a lot of machines and bundles a lot of operating systems on it does not a relevant market make," Maples shot back. "That happens only when people power it on and use it and walk to their store and ask for copies of applications that'll run on it," he said. "When that happens, we will be there."

Promises, promises

IBM is still sticking to its promise that 1,000 OS/2 2.0 applications will be delivered by third parties by year's end, even though only 300 have shipped so far. That means 700 need to ship during the next 10 weeks. Lotus still plans to ship 2.0 versions of its applications by year's end, but some of the other big-name application suppliers are still noncommital. At the OS/2 Developers Conference last week in New York, Borland Chairman Philippe Kahn said that we can "expect some database engines" for 2.0, but he did not mention any plans for Quattro Pro.

Counting the code

IBM last week disclosed a mega-operating system deal with Price Waterhouse that calls for it to supply the accounting firm with about 15,000 copies of OS/2 2.0. This is the latest megadeal for Price Waterhouse, which earlier this year signed an agreement with Borland to supply it with multiple thousands of licenses of its software, including Quattro Pro for Windows.

Peanut butter in chocolate?

Larry Lang, Cisco's product manager for Asynchronous Transfer Mode (ATM), has confirmed that the router giant will make a statement of direction for its ATM interface at Interop next week and will aim to ship product by mid-1993. Cisco last summer said it intended to build a new router architecture based on ATM cell-switching technology [CW, June 29] but did not offer any milestone development dates. Lang, however, quelled former indications that a full-blown ATM switch is in the works, though he said a router card within an ATM switch has been broached within Cisco walls. "It's the Reese's Peanut Butter Cup discussion," he said. "Do you put the router in the switch or the switch in the router?"

When enemies are friends

IBM is said to be aggressively pursuing OEMs for its SLC chip. Even Compaq was tempted to go with the chips from its longtime rival but leveraged a darling deal from Intel to stay put, one source said. Others rumored to have significant interest in the SLC: Dell, AST Research, NCR and DEC.

Will they or won't they?

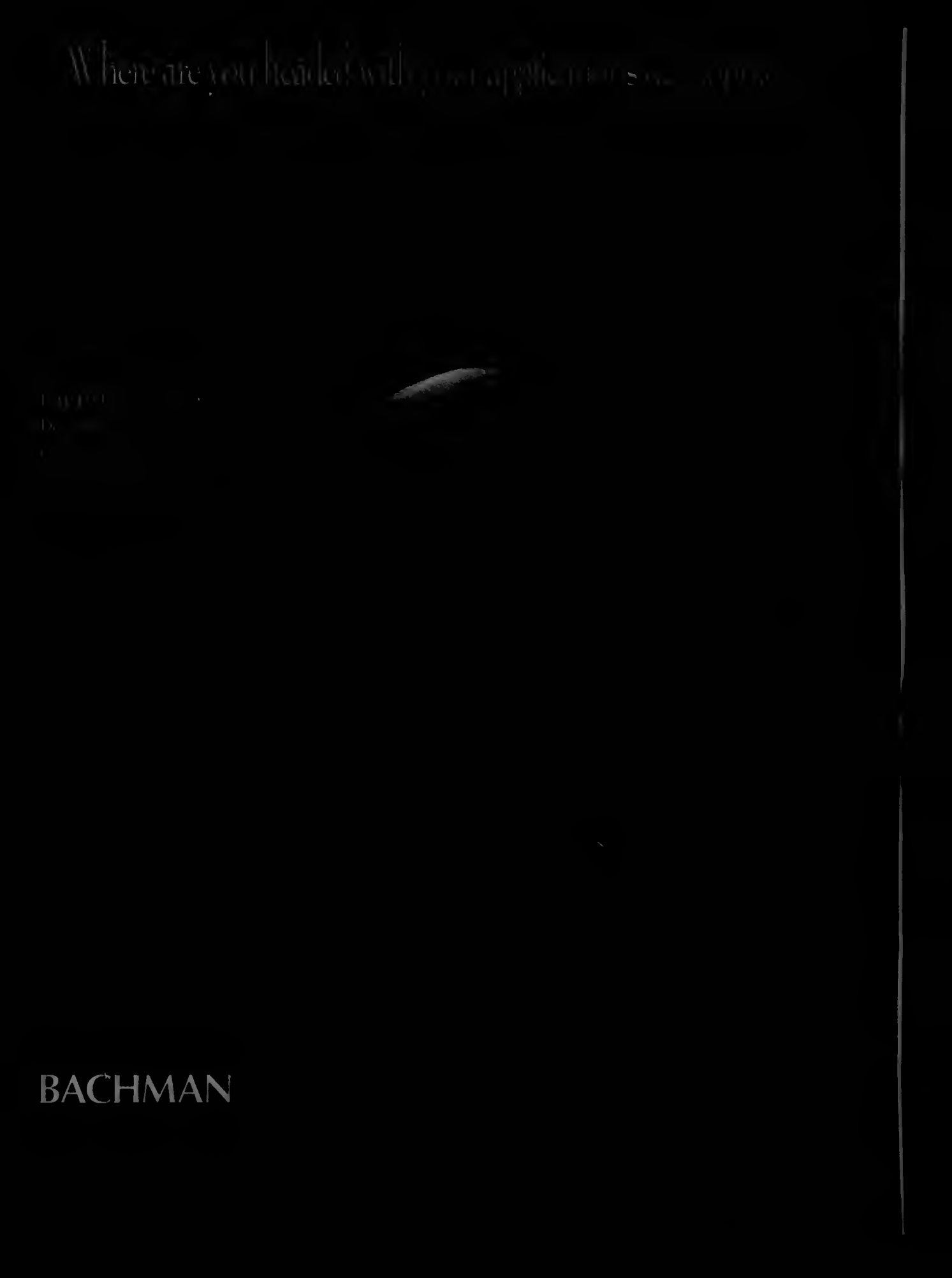
An IBM official last week said the company is "not sure" it will support Microsoft's Windows for Workgroups. It may instead come out with its own "native OS/2 2.0" workgroup offering. Details are few, but IBM said that if released, it would be "an add-on to the OS/2 environment."

No tricks, but plenty of treats

Toshiba is reported to be about to expand its T4400 high-end product line, adding two models with PCMCIA slots and passive-matrix color screens. It will also show its first pen system and some enhanced expansion station technology.

As massive internal changes occur at DEC, the company is trying to keep a tight lid on press leaks. Earlier this month, DEC security forces climbed up to the third-story apartment of free-lancer Kimberly Patch, who had written a story for The Boston Globe *that included information contained in "internal documents," and demanded that she return them. "I said that there was nothing to give back. They were obviously trying to be intimidating," Patch said. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try* Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555.*

Where are you headed with your application?



BACHMAN

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Application Development

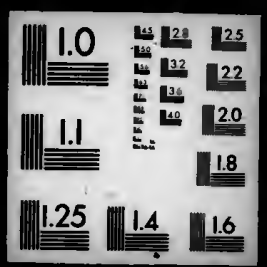
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COMPUTERWORLD

DEC restructuring takes form

Plan to focus on vertical industries, products and service business units

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. is expected later this week to offer a glimpse into horizontal product, sales and services groups as well as vertical business units that it hopes will bolster its sagging fortunes, sources close to the company said.

DEC is said to be structuring product-specific business units along the lines of components, storage products, PCs and multivendor systems integration.

Industry-specific customer business units in the offing include discrete manufacturing, process engineering, natural resources (oil and gas), financial and professional services and consumer retail and communications groups.

Control services

Both types of organizations would be serviced by a horizontal group that is likely to include engineering, manufacturing, sales and services.

DEC has attempted to create industry-related business groups in the past, but they included a mishmash of products driven by engineering rather than customer concerns.

At least theoretically, the new structure will enable the business units to go outside DEC for products or distribution channels if that seems feasible or to use the services of horizontal groups within the company.

Chief Executive Officer Robert Palmer may discuss elements of the restructuring — in addition to accelerating layoffs and plant closings — at the company's annual meeting this week in Boston, sources said.

DEC announced last week that it will close plants in Bur-

Continued on page 20

USL closes in on distributed view

BY MARYFRAN JOHNSON
CW STAFF

SUMMIT, N.J. — As users grow increasingly impatient waiting for the Open Software Foundation's technologies to yield workable products for managing distributed networks, Unix System Laboratories, Inc. is quietly preparing to jump ahead of the competition.

Although no product has been announced, USL officials said last week that they plan to deliver, by next fall, source code to their Unix System V vendors for building a suite of system management tools called Distributed Manager for Unix System V, Release 4 (see story page 7).

End-user products built by USL licensees such as Siemens/Nixdorf Information Systems, Inc. are expected before the end of 1993 — some months ahead of the anticipated early 1994 delivery of the OSF's Distributed Management Environment.

"As long as [USL and OSF] stay compatible, this is great news for users. This is competition for DME where there's never been any before," said Norton Greenfeld, director of Unix services at Computer Intelligence/Infocorp in Acton, Mass. "Talk about high drama — I think this will shake up the whole market."

OSF founding members IBM, Hewlett-Packard Co. and Digital Equipment Corp. are incorporating DME-based software components into future versions of

Continued on page 7

IS ponders fit for workgroup Windows

BY ROSEMARY CAPASSO
and CHRISTOPHER LINDQUIST
CW STAFF

NEW YORK — Microsoft Corp.'s first big pitch to the workgroup computing market could go far with small businesses and end users, but it was not scoring many hits with corporate information systems executives last week.

While several IS managers said Windows for Workgroups is compelling enough to deserve a closer look, they also said they were not yet sure how it would mesh with or add value to their networks and productivity tools.

"We are looking for workgroup technology, but we want to find something we could use company-wide," said Joseph Herrin, director of systems development at Joseph E. Seagram & Sons, Inc. in New York. "This seems to be geared toward smaller workgroups."

Noting the concerns raised by some IS executives, a Microsoft official said the company was not surprised because "the benefits of the product are not that well-known yet."

"People are going to take some time to evaluate it," said Russell Siegelman, Windows for Workgroups product manager, adding that Microsoft

Continued on page 8

Slow motion

GUIs can make the desktop computing environment a friendlier place to work, but users gave their GUI products mediocre satisfaction scores in providing speedy performance

See Buyers' Scorecard, page 48

Product	Score
Sun's OpenLook	7.5
IBM's OS/2	7.3
Microsoft's Windows	6.9
OSF's Motif	6.9

Maximum possible score: 10

Bank revs outsourcing pact

BY MARK HALPER
CW STAFF

ATLANTA — Stung by bad commercial real estate loans and changes in processing costs, Bank South Corp. has restructured its 10-year outsourcing pact with IBM subsidiary Integrated Systems Solutions Corp.

The move is another indication that long-term mega-outsourcing deals signed in the late 1980s are bending to pressure from business changes brought on by the recession and corporate restructuring.

Another client, Hibernia National Bank of New Orleans, has restructured its accord to give IBM additional responsibility for software applications.

In addition, Eastman Kodak Co. and IBM are rapidly approaching a four-year marker calling for them to consider major changes — up to and including parting ways.

Bank South's case is typical of the hardship facing banks. Assets have fallen from about $5.5 billion to $4.8 billion over the course of the ISSC contract. In this time, it has also replaced top

Continued on page 20

A new world

Some changes at Bank South that prompted a restructuring of its IBM outsourcing deal:

- Processing has increased even though the size of the bank has decreased.
- Cost-of-living increase projections were too high.
- Bank is implementing distributed processing and wanted to tap other vendors for products and services.

Standards fights vex users

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — With the words "openness" and "standards" on their lips and competition in their hearts, vendors last week sallied forth to win users' approval at the Interop '92 and Electronic Mail Association conferences.

Openness and standards mean different things to different industry sectors. There is one thread of consistency, however: Every vendor that professes to support open standards wants its own approach to dominate.

–For example, the Internet, minicomputer, mainframe and PC local-area network communities have their favorite network protocols and are ill-disposed "to play, technology-wise and business-wise, with each other," said Craig Burton, president of The Burton

Continued on page 15

INSIDE



Wayne Bell of Dr Pepper/Seven-Up pushes portables, groupware to speed sales and better track inventory depletion. Page 6.

Unix CASE to get boost via Andersen/HP client/server accord. Page 4.

Lotus' Jim Manzi outlines E-mail coexistence. Page 14.

Product Spotlight — There's more than one kind of work-flow software. Page 85.

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EXECUTIVE BRIEFING

November 2, 1992

A COMPREHENSIVE GUIDE TO THIS WEEK'S NEWS

DISTRIBUTED COMPUTING

COMPETITION HEATS UP in distributed systems management, where **Unix System Laboratories** is vowing to help its Unix System V, Release 4 vendors get to market with standardized products ahead of **Open Software Foundation** founders **IBM, HP and DEC.** *Page 1*

IBM'S MAINFRAME CUSTOMERS are looking elsewhere for distributed database solutions, citing corporate strategies that require answers that are not based on big iron and the lack of third-party support for IBM's distributed database architecture. *Page 4*

OUTSOURCING

BANK SOUTH, a charter **IBM** outsourcing customer, has renegotiated its 10-year deal to lower costs and give it more leeway to use non-IBM gear as it launches its own re-engineering project driven by a distributed computing design. *Page 1*

SUPER ENGINEERS

"SUDDENLY, SOMEBODY SAID, 'Hey, what if we tried this . . . ?' " That comment, by **Novell** chief scientist Drew Major, describes the moment of discovery scientists experience in the course of their careers — if they're lucky. Major and five other scientists from **Apple, IBM, TI, NCR and Sun** are driving the breakthrough thinking in vendor companies. Their work targets virtual reality, nanotechnology and intelligent networks, among other areas. *Page 93*

MANAGEMENT



IS HEADS FED UP with skyrocketing software purchase and maintenance costs are pressuring vendors to adopt new pricing schemes. Many are also practicing software asset management and other techniques to keep software costs down. *Page 99*

THE U.S GENERAL ACCOUNTING OFFICE is debating when the plug should be pulled on an IS project that is clearly failing. *Page 103*

IS MANAGER Jeff Olszewski considers the difficulty of managing staff stress in these tough times. Let people vent a certain amount of frustration, and don't make your stars shoulder all of the burden, he advises. *Page 33*

INFORMATION SECURITY PROFESSIONAL Howard Glassman cautions downsizing enthusiasts not to forget that applications running on smaller platforms also need to be secured and supported. *Page 33*

TO BE SUCCESSFUL IN IS, get out of it for a while, advises Gerry Long of **Summit Information Systems.** He says you can gain a better cross-functional perspective by playing the role of the user. *Page 109*

PC HARDWARE

HAVING FOUND a name for its next-generation chip, **Intel** outlines its plans for 25 power-efficient I486 models. *Page 37*

NATIONAL SEMICONDUCTOR aims at the business market with a multifunction communications card. *Page 38*

ASKING THE RIGHT QUESTIONS when ordering by mail saves more than money. Tops on the list: Does the advertised price buy a complete system? How quickly are replacements sent? Will it use generic parts? *Page 114*

ENTERPRISE NETWORKING

▶Users' dreams of interoperability remain distant as vendors escalate standards wars at Interop '92. *Page 1*

▶**IBM** moves toward a more open, affordable and TCP/IP-friendly version of its Advanced Peer-to Peer-Networking. *Page 14*

▶Financial services firm **J. P. Morgan** fills in the domestic LAN interconnect portion of its telecommunications outsourcing plan with frame-relay services from **CompuServe.** *Page 57*

▶Users get their choice of methods for integrating TCP/IP and SNA installations. *Page 57*

▶Banks continue to invest heavily in telecommunications projects, although they're beginning to reallocate how much they spend on leased-line vs. public networking. *Page 60*

▶**Sun** adds ISDN, frame relay and PPP products for its SPARCstations. *Page 64*

▶Systems managers are ready to implement integrated network management systems despite a lack of standards. *Page 64*

▶**MCI** announces what is said to be the first SMDS offering from a long-distance carrier. *Page 16*

ELECTRONIC MAIL

▶**Lotus** Chairman Jim Manzi grudgingly moves closer to **Microsoft's** E-mail spec but buries the good news in a scathing indictment of Microsoft. *Page 14*

▶Users at last week's **Electronic Mail Association** conference were encouraged that the warring E-mail API camps are calling a truce but cited other messaging hurdles as more relevant. *Page 14*

▶Wireless global messaging kicks off for mobile users, and **Lotus** reveals some of its plans for a wireless CC:Mail gateway. *Page 16*



What is this man doing?
See page 12

▶Work-flow software can reduce the application backlog, minimize requests for changes and give you a voice in your company's business. *Page 85*

PC OPERATING ENVIRONMENTS

▶Some IS executives are not sure **Windows for Workgroups** will be a good fit with their networks and productivity tools. *Page 1*

▶**IBM** says it is considering an OS/2 for workgroups for release next year. *Page 8*

▶Windows goes to Wall Street to drum up some support from the financial community, indicating **Microsoft's** increasing desire to be taken seriously in vertical markets. *Page 8*

▶**Sun's** OpenLook tops user satisfaction ratings of GUIs, while Windows and OS/2 receive virtually the same overall score but have strengths in different areas. *Pages 48, 49*

▶Users seem to like **IBM's** concept of a streamlined OS/2 2.0 but only if the operating system is losing fat, not function. *Page 37*

PORTABLE COMPUTING

▶Under pressure, **Toshiba** pushes to regain the lead in the 486 notebook market and plans a pen-based machine. *Page 12*

▶**Dr Pepper/Seven-Up** aims to arm its field personnel with groupware-equipped laptops to protect its shelf and tap new turf. *Page 6*



▶**Olivetti** will use Comdex/Fall '92 to show a subnotebook that lets users record voice messages. And **Toshiba** may show notebooks with built-in paging capability. *Page 39*

▶**Gateway's** Nomad and **Compaq's** LTE Lite/25 PC notebooks receive generally good reviews with minor criticisms of Nomad's use of plastic and the LTE's battery life. *Page 44*

▶**AT&T** is pushing low-power, high-performance chips aimed at mobile voice and data systems. *Page 41*

APPLICATION DEVELOPMENT

▶**Andersen Consulting** and **HP** enter the Unix CASE ring with the first module of an integrated workbench for building client/server applications. *Page 4*

▶**Sybase** creates a tools division, tries to forge a new generation of object-oriented products. *Page 75*

▶**Microsoft's** Visual Basic deserves a closer look from professional programmers, columnist Jesse Berst says. *Page 41*

▶A new **Smartstar** client/server development tool reduces SQL coding by up to 90%, users say. *Page 75*

▶Tool-maker **Centerline Software** has added C++ and other features to its ObjectCenter workbench. *Page 77*

▶An automated library for reusable software is now available for the commercial sector. *Page 76*

Mainframe software
• Legent outlines plans to make its desktop products more flexible and interoperable. ..... Page 12
• Information Builders unveils a smaller, less expensive way to start an information warehouse. ..... Page 70
• Stratus holds firm — for now — with product transitions, as the fault-tolerant market softens. ..... Page 67

Unix
• Pacific Gas & Electric develops an integrated set of disaster management applications on Unix workstations, including some tentative plans to roll them out on both X Window System PCs and Unix servers. ..... Page 51
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• MathWorks and a German vendor of real-time hardware have joined forces to take some of the risk and uncertainty out of mechanical design. ..... Page 52

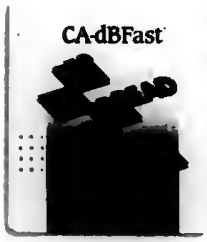
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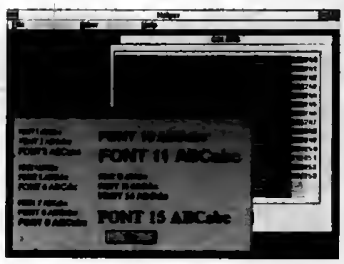
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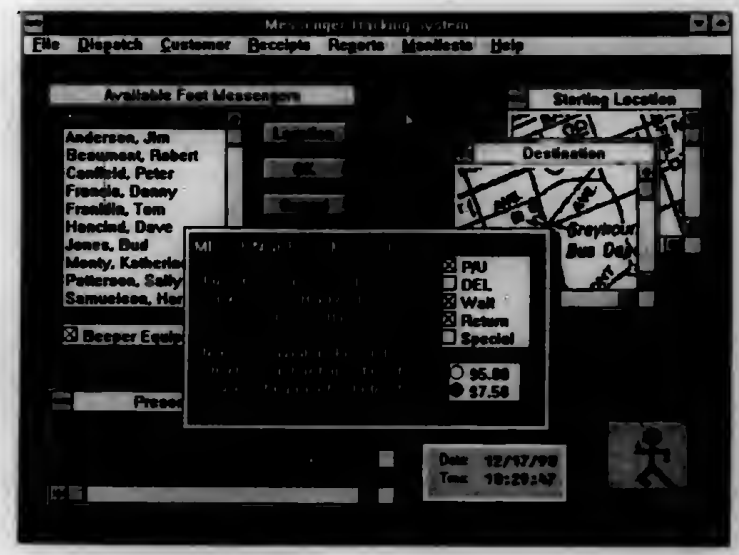
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Marcam to market IBM Mapics

BY KIM S. NASH
CW STAFF

HYANNIS, Mass. — Big-time IBM midrange software maker Marcam Corp. is about to get bigger, but the expansion could be pricey and could come at the expense of corporate control.

The $70 million company last week agreed to give IBM 20% of its 8 million outstanding shares of stock in return for worldwide responsibility for the midrange version of Mapics, IBM's market-leading manufacturing package.

Marcam will have to make additional payments to IBM of undisclosed sums based on Mapics' future profits. Plus, IBM gets a seat on Marcam's six-member board.

"The question is whether Marcam has bitten off more than it can chew," said Bill McSpadden, chief executive officer at Plantwide Research Group, a manufacturing market research firm in North Billerica, Mass. More than 20,000 users worldwide run Mapics, and Marcam "isn't used to dealing with an installed base that large," he said.

Marcam already peddles its own package, Prism, which is aimed at the process manufacturing market, such as chemical and pharmaceutical firms. Mapics, meanwhile, caters to industrial companies such as consumer goods makers.

Mapics users aren't likely to be affected immediately, as IBM will continue to support them. However, Marcam will take over further development of the decade-old product line, likely adding process-oriented features.

Jerry Goldman, computer-integrated manufacturing project leader and MIS director at Sybron Chemicals, Inc., was enthusiastic about the deal, which is subject to Marcam stockholder approval. Extensive process manufacturing tasks could be worked into future versions, Goldman said.

Right now, the Birmingham, N.J.-based company relies on a third-party firm to add process tasks to Mapics, but Marcam's expertise in this area might materialize in Mapics down the road, he explained.

Marcam Chairman Paul Margolis agreed, saying, "We're going to drive [Mapics] as a strategic offering."

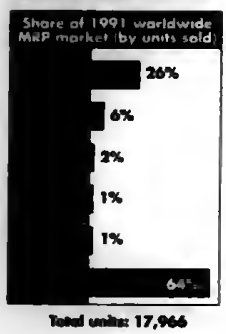
IBM drew $60 million in Mapics license fees last year, but profits from the line have dropped off significantly during the past few years, according to analysts. "There are tons of other smaller software makers that are continuously adding features to their products. IBM couldn't keep up," said John Borelli, computer-integrated manufacturing analyst at Gartner Group, Inc. in Stamford, Conn.

Bob Williams, vice president of IBM's worldwide industrial sector division, said Mapics "customers will be better served" under this setup, with Marcam in charge of development.

The package fills a hole in Marcam's product line that prevented it from competing with other System/3X and Application System/400 software makers, including System Software Associates, Inc. in Chicago and Pansophic Systems, Inc., which is now part of Computer Associates International, Inc.

Blue's image

IBM's Mapics commands 26% of a market that's divided by nearly 500 vendors



HP, Andersen offer CASE tools for Unix

BY KIM S. NASH
CW STAFF

CHICAGO — Hewlett-Packard Co. and Andersen Consulting confirmed plans to announce this week a computer-aided software engineering (CASE) workbench designed to build client/server applications for commercial Unix systems.

Unix CASE is already jumping, with companies such as Intersolv, Inc. in Rockville, Md., and Smartstar Corp. in Goleta, Calif., recently rolling out client/server generators for Unix platforms.



"This is the next big wave, and it's a wave users want," said Tony Picardi, an analyst at International Data Corp. in Framingham, Mass. Many traditional CASE vendors are trying to reposition themselves as the number of pioneers gutsy enough to adopt the first round of Cobol-oriented CASE products shrinks, he said.

Not the last deal

Andersen and HP officials said last week that the joint development and marketing deal is the first of several such partnerships. The company said it will team with other Unix systems vendors, including Digital Equipment Corp., in agreements soon to be announced.

The new product line is not based on HP's Softbench framework for Unix development but is anchored by Andersen's Foundation for Cooperative Processing (FCP) tool set. Andersen has several client/server success stories under its belt with FCP, "so it makes sense for HP to want to take advantage of that," Picardi said. The state of North Carolina, for example, is using FCP to construct several statewide systems to run in client/server mode [CW, Sept. 28].

Florida Power Corp. is beta-testing Foundation HP/UX Server Option, the first module in the line, due to ship in first-quarter 1993. Server Option was designed to generate client/server applications for HP 9000 Series 800 servers. The St. Petersburg, Fla.-based utility is almost one year into a three-year, $48 million project to migrate 20-year-old mainframe-based applications to a client/server platform.

A starter kit with the product and training will be priced at $50,000.

Companies such as The Brick Warehouse Corp. may be interested in the tool set. The furniture retailer in Edmonton, Alberta, has been looking for months for an integrated workbench for building Unix systems, according to Robert Gauf, manager of MIS research and planning.

Gauf said he has experimented with Teamwork from Cadre Technologies, Inc. and Software through Pictures from Interactive Development Environments, Inc. but ran into trouble integrating them with existing IBM PL/1 and Oracle Corp. systems. If he decides to halt that effort and rebuild applications from scratch, "any tool we choose will have to have a global repository and be able to generate applications from the bottom up. If not, it's not worth anything to me," he added.

Lack of DRDA support sends IBM users elsewhere

BY JOHANNA AMBROSIO
CW STAFF

ARMONK, N.Y. — Some of IBM's mainframe customers are looking elsewhere for distributed database solutions, citing corporate strategies that require answers not based on big iron, as well as the lack of actual third-party support for IBM's distributed database architecture.

That architecture — the Distributed Relational Database Architecture (DRDA), introduced in June 1990 — was intended to allow people to access relational database management systems from IBM and others. Some 25 third-party vendors have promised to support DRDA, although only a handful have actually implemented it. Four IBM database products — DB2, SQL/DS and the database managers in OS/2 and OS/400 — support DRDA in implementations delivered this year.

But DRDA does not appear to be catching on in all 5,500 or so DB2 shops. "We have no need for DRDA because all our new database development will be on Unix platforms," said Monica Simpson, database manager at BASF Corp. in Parsippany, N.J. "Open systems is our direction." At this point, IBM lacks an RDBMS for its AIX version of Unix.

Although some of BASF's corporate data will continue to reside in DB2 for a while, "most of our major production systems are in IMS and VSAM," Simpson said. She said the search is on to replace the corporate decision support system, now under DB2, with a Unix-based product.

Likewise, the Salt River Project in Phoenix is looking for DRDA alternatives, said John Chatfield, senior principal analyst. "The issue is that only a couple of vendors have any real products that use DRDA. We have Oracle and Sybase and other products that we need access to, and some of the other distributed database architectures, including Microsoft's, have some real products that meet these needs."

That is an issue for other customers as well, observers said. "The power tools that people are using to develop database applications are all on Windows," said Chris Bird, president of Model Systems Consultants, Inc. in Stamford, Conn. "IBM is hurting because they didn't foresee that clearly enough," and DRDA is losing steam as a result.

At a glance

IBM's Distributed Relational Database Architecture (DRDA)

Introduced: June 1990

Goal: To help users access relational data in IBM and other databases.

Status: Some 25 vendors have promised to support DRDA, with 10 actually licensing the technology, but so far only one has introduced a product that incorporates the architecture. IBM began delivering DRDA functionality in some database releases this year.

CW Chart: Janell Genovese

Stick to their guns

But IBM managers defended the tack they are taking with DRDA, saying it is becoming better accepted and that it is technically superior to other available database connections.

Some 10 vendors including Ingres Corp., Oracle Corp., Novell, Inc., Borland International, Inc. and Informix Software, Inc. have licensed DRDA and have promised to build the specifications into their products. So far, however, only XDB Systems has delivered a DRDA product. But Object Technology International, Inc. is slated to do so later this month.

About 15 other software vendors have said that they will introduce applications that are DRDA-capable, although these vendors have not licensed DRDA.

"Major players have said they will adapt our protocols," said Don Haderle, IBM's director of strategy and architecture in the enterprise database solutions group. "If this thing had fallen flat, we'd be having a different conversation."

He added, "It's not just about database access. You can already buy gateways to connect into DB2 from the workstation, but the question is the overhead that those gateways require. We're trying to provide a standardization, a common protocol, so customers have fewer things to manage rather than more."

Still, Chatfield said, "The question is: What is real, and what is real in the near time frame?"

TWO-PHASE COMMIT SYBASE VS. ORACLE7

PROGRAMMATIC AND PROPRIETARY
MORE THAN 50 LINES OF CODE

```
/* as before if anyone fails then abort all, otherwise commit */
two-phase()
{
/* open up two servers and a commit service */
   dbproc_server1 = dbopen(login, databasename1);
   dbproc_server2 = dbopen(login, databasename2);
   dbproc_commit = open_commit(login, NULL);
/*
** prepare data for each command buffer and select a database to
** use, then start distributed transaction on commit service
*/
   commid = start_xact(dbproc_commit, application, "my_xact", 2);
/*
** build transaction name and begin transactions on different
** servers
*/
   build_xact_string("","" commid, xact_string);
   dbfcmd(dbproc_server1, "BEGIN TRANSACTION %s",
   xact_string);
   dbsqlexec(dbproc_server1);
   dbfcmd(dbproc_server2, "BEGIN TRANSACTION %s",
   xact_string);
   dbsqlexec(dbproc_server2);
/* perform various updates and then.... */
/* if there is a failure on one abort all of them */
   if (return_code == FAIL)
   {
      abort_xact(dbproc_commit, commid);
      dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server1);
      dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server2);
      if (return_code != FAIL)
      {
         remove_xact(dbproc_commit, commid, 1);
      }
   dbexit();
   exit(ERREXIT);
   }
/* otherwise prepare to commit */
dbcmd ( dbproc_server 1, "PREPARE TRANSACTION");
dbsqlexec (dbproc_ server 1);
dbcmd (dbproc_ server 1);
dbcmd ( dbproc_server 2, "PREPARE TRANSACTION");
dbsqlexec ( dbproc_ server 2 );
```

```
UPDATE SAVINGS
SET S_BALANCE = S_BALANCE - 250.00
WHERE S_DEPOSITOR = 'JONES';

UPDATE CHECKING
SET C_BALANCE = C_BALANCE + 250.00
WHERE C_DEPOSITOR = 'JONES';

COMMIT WORK
```

It may sound incredible, but, some early client/server databases, like SYBASE, don't automatically ensure the consistency of distributed transactions.

With SYBASE, when a single transaction must update related data on multiple servers, it is up to the applications programmer to write specialized program code to do it. LOTS OF CODE. Complex, unfamiliar, error-prone system control code that has nothing to do with business applications. It's costly and it's risky.

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NEWS SHORTS

Confirm suit goes to mediation

A Texas judge last week assigned one of the lawsuits in the Confirm reservation system debacle to mediation. The suit, brought by AMR Information Services, Inc., was assigned to Dallas-based mediator Harlan Martin. The judge set an Oct. 4, 1993 trial date in case mediation fails. AMR's suit alleges that its partners in the bungled Confirm project — Marriott Corp., Hilton Hotels Corp. and Budget Rent A Car Corp. — withheld funds, missed deadlines, made poor staffing assignments and, in some cases, withdrew from the project in violation of their contract. Meanwhile, the lawsuits keep flying around Confirm's remains. Last week, a former Amris employee, Rob Geller, sued AMR, AMR Chairman Robert Crandall, AMR information systems chief Max Hopper, former Intrico Vice President Charles Biebighauser, and the Intrico partners, for defamation. Geller claims the defendants smeared his name and made disparaging remarks to his new employer, MCI.



Ex-IBM exec joins Synon

Former IBM general manager Richard Goldberg is expected to join Synon Corp. this week. He will oversee daily operations worldwide. Goldberg, who took advantage of IBM's early retirement program in July, comes to Synon two months after IBM took a 10% equity stake in the $50 million Larkspur, Calif.-based application development firm. William Grabe, a partner in venture capital firm General Atlantic and a former marketing executive at IBM, will become co-chairman along with Chris Herron, a Synon founder.

Microsoft to use CDDI

After 18 months of industry talk about putting 100M bit/sec. Fiber Distributed Data Interface technology over copper wiring, Microsoft Corp. has announced plans for a significant "Copper-DDI" network. The vendor said last week that it will leverage Crescendo Communications, Inc. adapter cards and concentrators to link desktops to critical Intel Corp. 1486-based servers clustered in the corporate data center.

Mac gains network connections

Apple Computer, Inc. announced pricing and availability for products that connect the Macintosh over a wide range of networks. AppleTalk Connection for Macintosh is said to include data link drivers for LocalTalk, Ethernet, Token Ring and AppleTalk networks. TCP/IP Connection for Macintosh is said to provide all software needed to put a Macintosh on a Transmission Control Protocol/Internet Protocol network. Both products include an agent that enables them to be managed by Simple Network Management Protocol systems, Apple said. Availability is scheduled for spring 1993.

Short takes

Oracle Corp. late last week revealed that it had shipped initial copies of its next-generation relational database management system, Oracle 7. The product, which debuted June 15, had been expected at select customer sites in October. Volume shipments are expected early next year ... **Northgate Computer Systems, Inc.** will offer a five-year warranty on its new line of servers and disk arrays.... **AT&T EasyLink and Go Corp.** said Go Mail users will now be able to link to AT&T Mail through AT&T EasyLink Services.... **NEC Technologies, Inc.** lowered prices on several of its UltraLite notebooks and PowerMate Express desktop systems by up to 41%.... **AST Research, Inc.** cut prices by up to 31% on its Bravo line of low-cost PCs. Base price is now $1,400 for a 486-based system with a 120M-byte hard drive and a monitor.... **Advanced Logic Research, Inc.** introduced the PowerFlex Flyer/SmartLine family of low-end desktop computers starting at $799. The line is aimed to compete with **Compaq Computer Corp.**'s ProLinea and **IBM**'s Personal System/ValuePoint lines.... **NCR Corp.** shipped its first low-cost PC, the 3225. Based on the AT bus and a 25-MHz 80386SX processor from Intel, a base model including an 80M-byte hard drive will cost $967. The machine represents the first in NCR's line of low-cost PCs.

More news shorts on page 16

Adding portables to the pop

Dr Pepper/Seven-Up hopes to beef up selling time with groupware, laptops

BY JOANIE M. WEXLER
CW STAFF

DALLAS — The Dr Pepper Co./Seven-Up Co. has set its sights on becoming the first soft-drink maker to equip its entire field sales and marketing staff with portable PCs sporting customized groupware applications.

The project is aimed at beefing up the amount of time field personnel spend selling and allowing them to resolve inventory depletion and other issues immediately in the high-turnaround industry, said John G. Stevenson, vice president of information systems.



John Stevenson *hopes reps will be more responsive*

The project will center around a suite of customized groupware applications jointly produced by Dr Pepper/Seven-Up and either Lotus Development Corp. or Data One. The soft drink maker has already done preliminary development work with both vendors for a prototype presentation to be made to a Seven-Up automation committee in December.

While the project's green light still hinges on the prototype, high-level backing means "the chances are very good" that an eight-person pilot will roll out early next year. The pilot will involve sales reps running the gamut of computer literacy, said Wayne L. Bell, manager of information services. The full 280-user project is slated to kick in by year-end 1993.

The Seven-Up side of the $620 million company has gained the sponsorship of Seven-Up Chief Operating Officer Francis Mullin and Senior Vice President of Bottle/Can Sales Robert Quirk for a pilot laptop program to begin early next year, Bell said.

Support from top executives is apparently driving many large information systems projects. A recent study of 150 companies by Houston-based consultancy Currid & Co., for example, determined that nearly all successful IS projects are championed by non-IS high-level executives, noted Currid President Cheryl Currid.

Mike Cunningham, MIS supervisor at Dr Pepper/Seven-Up, said his staff examined other soft drink companies, and "we saw a lot of handheld units used by full-time auditors for gathering trucking route information. But there wasn't much automation for the reps."

Dr Pepper/Seven-Up has a big incentive to strive for technical innovation with laptops and other technologies such as electronic data interchange (see story below): It is a middle-size soft drink player without the marketing clout of the cola kings to guarantee its presence on store shelves and restaurant taps.

To protect its turf, Stevenson said he intends for the program to "turn the stacks of paper reps carry around in the trunks of their cars into Shake 'n' Bake analysis tools," allowing sales reps to be more responsive and inciting distributors and bottlers to continue doing business with them.

Currid, who was formerly director of applied information technology at Coca-Cola Foods, said "it sounds like Dr Pepper is doing this right."

Currid noted that the soft drink industry is "traditionally slow on the technology wave because of its distribution model. You can't manage what you can't measure."

She explained, for example, that because soda is purchased from local distributors instead of directly from sales representatives, it is difficult for an individual rep to know what he has sold.

Emphasis on action

Some groupware applications under construction at Dr Pepper/Seven-Up are aimed at allowing salespeople to act on information while a promotion is in progress instead of reacting later. For example, "sales managers are saying their people are continually getting hammered on an out-of-stock condition during a promotion. That's like death for a field guy," Cunningham said.

One time-relieving goal is the automation of about 200 reports that salespeople currently have to deal with manually, Bell said.

Paperwork is a common productivity-inhibitor for sales representatives in the consumer products industry, Currid said. "It is not uncommon for a salesperson in this industry to spend 20% of his time on administration," she said. "In fact, many will take Fridays off just to do their reports."

After the Seven-Up rollout, "we'll tackle the Dr Pepper side," Bell said. He explained that both companies continue to be run as separate operations despite their late-1980s merger.

Cunningham would like to see the solidification of laptop standards for form factors, external bus, docking stations, batteries and adapters before deciding on a hardware vendor.

"We need to protect the company's investment; we see about a 20% turnover in PCs each year," he said. "The soft drink maker is considering pen-based technology because of its ease of use for spot checking bottles and recording information on the fly."

Sign on the dotted line

Dr Pepper/Seven-Up is facing a possible legal glitch with one of its most strategic technology projects today: getting electronic data interchange (EDI) procedures in place with its 700 bottlers and other distributors.

An issue surrounding the validity of electronic signatures on credit-card-like receipts for deliveries is confounding the currently 5% EDI-ready company as it embarks on a major expansion of its electronic exchange of business documents, said Wayne L. Bell, manager of information services.

"We need to find a mechanism to make that electronic document as legally binding as that signature on the paper document," he said.

The issue is imminent for the major EDI initiative that Dr Pepper/Seven-Up has undertaken with Pepsi, one of its distributors, that is slated to kick in next month.

The two companies intend to automate roughly 400,000 paper transactions a year, Dr Pepper/Seven-Up said. Currently, the company is recruiting the assistance of its legal department to help resolve the signature validity issue, Bell said.

Dr Pepper/Seven-Up said it intends to be up on EDI with distributors in 21 sales territories by the end of the first quarter of 1993 with about 30%, or 2.5 million, transactions on-line. John G. Stevenson, vice president of information systems, said the quicker cash flow and rebate system EDI documents afford will give distributors extra incentive to continue doing business with the company.

STEFANIE MCCANN

USL closes in on distributed view

CONTINUED FROM PAGE 1

products, such as IBM's NetView/6000, HP's OpenView and DEC's MCC Director.

"We expect to be delivering real products and applications before OSF, but we are looking to be sure we don't split the industry," said Richard Bevis, a USL marketing manager. "The work OSF is doing is ground-breaking and will help everyone."

Compatibility is clearly the crucial factor for users, said Steven Jenkins, a member of the OSF's end-user steering committee and a software architecture engineer at the Jet Propulsion Laboratories in Pasadena, Calif. "If this USL product is going to be DME-compliant, then that's great. The last thing we need is competing de facto standards."

Based on Tivoli Systems, Inc.'s Management Environment, USL's Distributed Manager will offer an integrated set of applications for managing basic system resources such as licensing, system and storage device monitoring and network distribution of software updates. The USL licensees — none of which have yet publicly committed to the product — will have the option of offering either various pieces of Distributed Manager or the entire package.

"What USL is doing is getting a product that works to market sooner," said Rikki Kirzner, an analyst at Dataquest, Inc. in San Jose, Calif. "At least it's something people can start building on."

A coherent, standardized approach to systems and network management has long topped the wish list in the open systems user community. Yet even the most ardent supporters of the OSF's efforts are weary of waiting for useful products.

"You can only talk about how neat something is going to be for so long, and then you have to deliver something," Jenkins said.

Analysts said USL, a onetime rival Unix camp and now a cordial ally of the OSF, is taking a different approach to the same problems DME hopes to solve. As long as USL adheres to the specifications and standard interfaces that define DME, analysts said, there should be no problems connecting with future DME products.

However, the OSF views the rival product as nothing more than "a step toward DME," said Jon Gossels, a business area manager at the Cambridge, Mass.-based OSF. "They're getting to market with a different product. It's not multivendor, heterogeneous integrated management like DME."

An initial drawback to Distributed Manager will be its capability to manage only System V, Release 4 Unix systems instead of a mixture of Unix and non-Unix platforms. However, USL officials stressed that they will "actively pursue" opportunities to port the software to other platforms. The reference platform for Distributed Manager is an Intel Corp.-based PC running System V, Release 4 Unix.

Bevis said USL also plans to ensure integration of Distributed Manager with management software applications and network operating systems already in place at information systems shops.

A significant difference between Distributed Manager and DME is that USL's offering does not require installation of the OSF's Distributed Computing Environment (DCE) as an underlying platform. DCE can be thought of as basic network plumbing, while DME is more like the sink and cabinets that make use of the underlying pipes.

"We're both addressing the same user problems: how to manage distributed systems and get user service levels to where they should be, at an acceptable cost," Bevis said. Gossels cautioned that the lack of a DCE base means Distributed Manager cannot interoperate with DME. Bevis agreed but stressed that USL plans to add DCE support (and thus DME compatibility) to a later release of Distributed Manager.

One-upmanship

USL's Distributed Manager for Unix System V, Release 4 will integrate applications from several partners:

Host management: Tivoli Systems

License management: Gradient Technologies, Inc.

Distributed software installation: Unisys Corp.

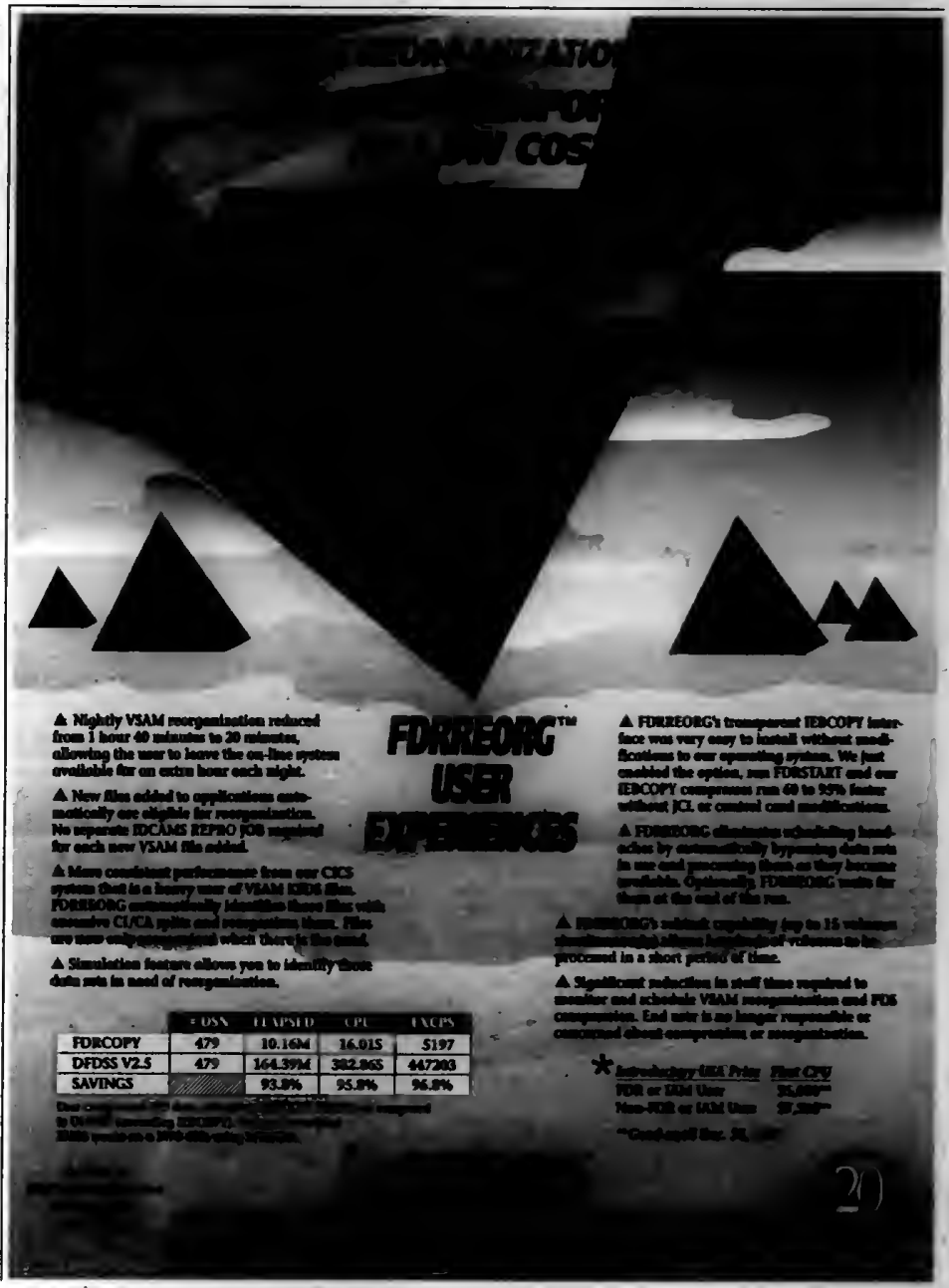
Print spooling and management: Siemens/Nixdorf Information Systems, Inc.

Storage device management: Pyramid Technology Corp.

User and group management: Pyramid Technology

Backup/restore: No partner yet

- Source code available to USL licensees next fall, with end-user products expected by the end of 1993.
- Pricing expected at about $30,000 for midrange systems.



IS ponders fit for workgroup Windows

CONTINUED FROM PAGE 1

expects a typical evaluation process to last six to nine months. "It is a new concept," Siegelman added. "It doesn't easily fit into a category like other products."

Microsoft appears to be taking a two-pronged approach to marketing the product, both as an entry-level network environment for small businesses and as an easy way for larger companies to attach Windows workstations to existing networks. Customers with such networks would also gain the benefit of features such as Network Dynamic Data Exchange, according to Microsoft.

At first glance, Windows for Workgroups — with its basic peer-to-peer networking functions, low upgrade prices and the everything-in-one-box packaging — seems targeted primarily at small groups or individuals. The starter kit includes 25 feet of cable to create a Windows for Workgroups network.

Ann Palermo, director of workgroup and messaging systems research at International Data Corp., said that while Microsoft is aggressively pursuing corporate business, Windows for Workgroups seems more "a good product for a small office."

"If you have an electronic-mail system installed, or you're networked already or your workgroup is beyond a handful of people, and you have multiple LANs and sites, the Windows for Workgroups alone is not for you," Palermo said.

"Would a Novell user dump their LAN? No," Palermo added. "Would a CC:Mail user dump their E-Mail? No. It is an option for mail and networking in some situations, particularly small workgroups."

Some IS executives said they already have a number of the functions that Windows for Workgroups offers. The software, based on Microsoft's Windows 3.1, provides basic peer-to-peer networking functions, Microsoft Mail and several workgroup functions, such as calendaring and scheduling, in one package.

"The obvious market is the people who aren't networked," said Jude Gartland, a senior vice president at Lehman Brothers in New York. "I'm thinking of using it at home. Small groups that haven't really been touched by LANs and WANs will eat this stuff up."

However, Gartland said he wonders if Windows for Workgroups "is different enough to bring in" at Lehman Brothers, which already runs Novell, Inc. local-area networks. In addition, "we already have a mail system, common drives and common areas to put things out to people," he said.

Jim Lisiak, a systems analyst at Chevron, Inc., said he believes Windows for Workgroups could likely first pop up in smaller offices at companies that do not want to invest in a server or network administrator but do want the peer-to-peer functions. Eventually, it may become more widely used.

"I think this is going to be a grass-roots thing," Lisiak said.

> **"THE OBVIOUS MARKET is the people who aren't networked. I'm thinking of using it at home. Small groups that haven't really been touched by LANs and WANs will eat this stuff up."**
>
> JUDE GARTLAND
> LEHMAN BROTHERS

Product lowdown

Windows for Workgroups, basic stats:

- Preinstalled on 40 hardware manufacturers' systems, including Compaq Computer Corp., Hewlett-Packard Co., Gateway 2000, Inc. and Zenith Data Systems. Microsoft estimates 1 million copies will be shipped with desktop and laptop systems within the year.
- Many software providers also plan support, including Wordperfect Corp., Beyond, Inc. and Dun & Bradstreet Software.
- Several pricing schemes, including a starter kit containing all hardware and software for two PCs for a list price of $849.95. Windows for Workgroups software alone lists for $249.95. Windows 3.1 users can upgrade for $99.95, and Windows 3.0 users can upgrade for $149.95. In addition, Microsoft announced the availability of the Workgroup Connection for MS-DOS, which allows DOS users to access Windows for Workgroups machines, without file sharing, and send and receive E-mail. It has a list price of $79.95

IBM mulls an OS/2 for workgroups

BY ROSEMARY CAFASSO
CW STAFF

As Microsoft Corp. ships initial copies of Windows for Workgroups, IBM said it is evaluating the possibility of releasing a similar product based on OS/2 2.0 sometime next year.

IBM also said it is unsure whether it will support Windows for Workgroups as it now supports Microsoft's Windows operating platform under OS/2 2.0.

A workgroup version of OS/2 may include an integrated version of Lotus Development Corp.'s CC:Mail as well as other workgroup utilities, such as calendaring, said Joseph Damassa, manager of IBM local-area network systems marketing.

Several OS/2 users contacted last week said they would not want to see workgroup functions built into the basic OS/2. Instead, they would like to see an optional OS/2 with workgroup features.

"I don't care for a bundled operating system," said Joseph Herrin, director of systems development at Joseph E. Seagrams & Sons, Inc. in New York. "If I wanted that, I'd get an AS/400. I prefer a more open approach that lets you mix and match components."

IBM claims to now have the components necessary to provide OS/2 for workgroups. The company resells Lotus' CC:Mail and Notes.

"What we are working through now is how we package it," Demassa said. "The decisions are being made, and we'd like to have them surface as products next year."

One lingering question is peer-to-peer networking, Demassa said. While some customers have expressed interest in including peer-to-peer networking capabilities in OS/2, it is "not a common request."

Microsoft eyes Wall Street with Windows applications

Conference on financial tools draws 650 execs

BY CHRISTOPHER LINDQUIST
CW STAFF

NEW YORK — Microsoft Corp.'s Windows on Wall Street conference last week was the latest example of its increasing desire to be taken seriously by vertical corporate markets. And while the attendees may not have seen anything particularly new, they did have a chance to meet other financial professionals and discuss the prospects of Microsoft's making significant headway in this important market.

"There was a lot of hallway conversation going on," said Michael Packer, managing director of technology and planning at Bankers Trust Co. He gave a presentation on "Rightsizing on Wall Street."

The conference was perhaps more interesting in terms of what it said about Microsoft's desire to move into vertical markets than for its content, Packer noted.

Whether Microsoft's struggle to gain credibility in such markets is succeeding is still an open question, but the company's sheer pervasiveness in the PC software market across all segments forces customers to keep at least one eye on the Redmond, Wash.-based company.

Force to reckon with

"I don't think anybody who wants to work in the computer industry on this planet can't take Microsoft seriously," said David Readerman, an analyst at Shearson Lehman Brothers, Inc. in San Francisco.

Readerman also noted that Windows and its applications are making a decisive move into the financial sector, further ensuring Microsoft's future importance. "For office applications, you have to work with Microsoft," he said.

According to Microsoft, more than 650 banking and financial executives, consultants and analysts attended the conference to see their peers give presentations of financial applications based on Windows.

Attendees also saw several independent software vendors and integrators demonstrate financial applications based on Microsoft platforms.

Financial apps

Representatives from several large financial organizations, including Barclays Network Services and Merrill Lynch Research, gave presentations of applications used in their companies, such as Merrill Lynch's Mutual Funds Analysis System, which is based on Microsoft's Excel.

Among the other announcements was one from Teknekron Software Systems, Inc. in Berkeley, Calif. The software subsidiary of systems integrator Teknekron Corp. unveiled plans to develop Windows and Windows New Technology-based financial applications in conjunction with Microsoft Consulting Services. Teknekron Software Systems' applications currently run under Unix.

Other products demonstrated included The Perfect Hedge by Glassco Park, Inc. in Surrey, British Columbia, and a set of branch banking applications created by York, Pa.-based Ampersand Corp.

CORRECTIONS

A photo in the Oct. 26 issue was not of Edward McCracken of Silicon Graphics, as was indicated.

.....

Contrary to information contained in a story in the Oct. 19 issue, Novell, Inc. officials said 1,000-user licenses and protected-memory application space will both be available in Novell's initial release of its upcoming NetWare 4.0 product.

.....

A reporting error in "KnowledgeWare to buy CASE consultancy" [Oct. 19] caused V. F. Corp. to be incorrectly identified. It is a Wyomissing, Pa.-based apparel maker.

.....

An editing error in "Quattro Pro for Windows boosts usability" [CW, Oct. 19] altered the meaning of a sentence. The sentence should have read ". . . while it is easier to use than Excel, it is questionable whether that is enough to make an experienced Excel user want to switch."

.....

A chart in the Oct. 12 issue showing the installed bases of various electronic-mail packages listed a package called "Right Hand Man." The package, from Futurus in Atlanta, has been renamed "Futurus Team."

.....

Because of an editing error, "Marching orders" [CW, Oct. 19] failed to credit the CW Database Division for conducting the survey.

.....

Because of a writer's error, an In Brief item in the Oct. 26 issue implied that application development tools makers Pure Software, Inc. and Mercury Interactive, Inc. plan to merge. In fact, they plan to merge their product lines early next year.

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Canada casts vote for LAN deployment

Agency uses automated system to handle voter registration for recent national elections

BY LYNDA RADOSEVICH
CW STAFF

OTTAWA — An automated voter enumeration system received a thumbs-up from Canadian election officials, who put the system to the test while preparing for Canada's referendum vote last Monday.

Elections Canada, the agency in charge of running Canadian elections, deployed local-area networks in each of the 295 electoral districts to help the district officers automate the production of voter lists. The system was not used to poll the voters on election day. That process still involved paper ballots and wooden boxes. But the system did speed up the creation of lists of eligible voters.

In prior elections, the officers hired people to go door to door, writing down the names and addresses of eligible voters and typing the lists at night on typewriters. The officers made photocopies of the lists for candidates, Elections Canada and record files. By law, fresh lists had to be prepared before each election.

The automated approach made the process easier to control, said Frank Ching, a returning officer based in Brampton, Ontario.

"For one thing, I could track the information coming in. If a pair of enumerators weren't doing their jobs, I knew it. Previously, I didn't know" what they were doing until the typed lists came in, he said. Other advantages include having all the voter data available for analysis, he said.

The problem with using networked computers was that no one knew when the next election would be called or where the local district leaders would establish headquarters. In Canada, elections are not held at regular intervals. The Parliament of Canada can call for elections at any time during its five-year term.

Elections Canada needed mobile LAN systems that, like military units, could be set up to attack whenever Canada's Parliament called an election.

"A lot of people asked, 'Why didn't you do this sooner?' " said Harry Neufeld, director of information technology at Elections Canada. "But there is tremendous risk in dropping technology into offices that aren't there until elections are called."

A vote for SHL

Elections Canada chose network integration giant SHL Systemhouse, Inc. in Ottawa to coordinate the $15 million project in June. By August, SHL Systemhouse had 2,791 PCs, 614 printers, 306 preconfigured LANs and 10 disaster recovery LANs packaged and waiting in warehouses.

In addition, 4,000 systems administrators, data entry clerks and other personnel were ready to set up shop across Canada within seven days of a call for an election.

ELECTIONS CANADA needed mobile LAN systems that, like military units, could be set up to attack whenever Canada's Parliament called an election. In Canada, elections are not held at regular intervals.

"This system will save the taxpayers $10 million," Neufeld said. Most of the savings will happen next time an election is called because rather than starting from scratch, enumerators can simply update existing lists.

The system was not flawless. Neufeld said there were "hundreds" of problems with uninterruptible power supplies, hard disk failures and, in one case, a machine literally going up in smoke. But "we foresaw most of the problems," he said, "and Systemhouse had the resources in place to handle them."

Democracy in motion

When the call for elections went out in early September, Elections Canada swung the system into place.

First, on-call administrators in each district set up the LANs, and the return officers approved them in seven days. Then the return officers in each of the 295 districts hired enumerators to survey all the adults in their district and prepared a voter list within 36 days.

Data entry clerks stationed at the networked PCs in the district office keyed the handwritten survey information into a customized database program called ECAPLE, or Elections Canada Automated Production of Lists of Electors, which was developed by ISM Information Systems Management Corp. in Regina, Saskatchewan, using Computer Associates International, Inc.'s CA-Clipper. The LANs ran Artisoft, Inc.'s LANtastic network operating system.

After the elections, the entire system will be back in boxes in 22 warehouses, waiting for the next Canadian election.

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System crash



A mainframe basher *exercises his frustration with big iron at a demolition derby sponsored by the Boston Computer Society (BCS) in Cambridge, Mass., last week. Participants paid $5 for five minutes of beating up old computers that were not fit for the landfill. Proceeds went to a BCS committee that serves nonprofit organizations.*

Toshiba turns up heat in 486 market

New notebooks, pen system highlight activity

BY MICHAEL FITZGERALD
CW STAFF

IRVINE, Calif. — Toshiba America Information Systems, Inc. today will battle back against competition in the notebook market by releasing two new multifeatured 486 notebooks and announcing its first pen system for the U.S. market. Toshiba also cut prices 15% to 25% across much of its product line.

The pen-interface system, the Dynapad T100X, a 3.3-pound, notebook-size system, will be available in January. New monochrome and color notebooks are available now.

Toshiba has seen its notebook market share figures fall from 19.4% in 1990 to a projected 13.6% this year, according to BIS Strategic Decisions, a market research firm in Norwood, Mass. Apple Computer, Inc. surpassed Toshiba, becoming No. 1 in notebook sales, thanks to its hot-selling PowerBooks, and Compaq Computer Corp. is threatening to make it No. 3, according to BIS.

Bounce potential

Toshiba is not slipping quietly and may bounce back strongly because of its push into the 486 notebook market, analysts said.

"I'm impressed by the new products," said Chris Vasko, an analyst at BIS. "They're already the leader in the 486 market, and they've done a lot of work on its display and made it lighter, which is the key success factor."

"People are looking for the next level of performance out of the notebook; they're ready for the 486," said Janet Cole, an analyst at Dataquest, Inc. in San Jose, Calif.

Cole said applications for Microsoft Corp.'s Windows environment were driving the market toward the 486.

Marshall Fernholz, network control manager at the American Medical Association (AMA) in Chicago, said his company uses Toshiba notebooks and that the new products "look like great stuff, but it's hard to justify the price" for the color screens. Even so, Fernholz said, the AMA will probably soon buy at least a couple of color notebooks.

Features galore

The new T4500 steps beyond the existing T4400 line by being more than a pound lighter and offering up to an extra hour of battery life, thanks to a low-volt Intel Corp. processor.

The T4500 series also features a display that gives more information about the state of various system components, such as the battery.

The existing T4400C features faster 486SX and 486DX chips and is expected to offer a 200Mbyte hard drive in December. It also has a larger screen — 9½ in., compared with 8½ in. for the T4500C.

The 3.3-pound Dynapad is based on a low-volt chip from Advanced Micro Devices, Inc.

"It's a nice system, has a good feel and [Personal Computer Memory Card International Association] cards, and at that low weight, it's much more the kind of thing people are going to need in the field than something like the ThinkPad," an IBM product that weighs more than 7 pounds, Cole said.

What should help is a street price near $3,000, which is low in the current pen hardware market. The system's light weight in a full-size notebook is also distinctive.

Getting serious

Toshiba's new notebook line includes its first pen-based system marketed in the U.S.

	Dynapad T100X (pen-based)	T4500 (notebook)	T4500C (color notebook)
Weight	3.3 pounds	6.4 pounds	6.6 pounds
CPU	AMD 25-MHz 386SXLV (3.3V)	Intel 20-MHz 486SX (3.3V)	Intel 20-MHz 486SX (3.3V)
Size	10.6- by 8.3- by 1.6 in.	11.7- by 8.3- by 2 in.	11.7- by 8.3- by 2 in.
Slots	2 PCMCIA slots	PCMCIA slot	PCMCIA slot
Storage/ memory	40MB-byte hard drive 4MB bytes RAM	80MB- or 120MB-byte hard drive 4MB bytes RAM	80MB- or 120MB-byte hard drive 4MB bytes RAM
Power	2-3 hour battery life	3-4 hour battery life	3-4 hour battery life
Availability	January 1993	Now	Now
Price	$3,499	$2,799 (80M-byte drive) $2,999 (120M-byte drive)	$4,399 (120M-byte drive)

CW Chart: Michael Siggins

Legent increases options, flexibility in desktop line

Pacts with independents boost interoperability

BY GARY H. ANTHES
CW STAFF

VIENNA, Va. — Legent Corp. last week announced agreements with two independent software vendors that will enable it to build flexibility and user choices into its family of desktop products.

Legent will use the Galaxy Application Environment from Visix Software, Inc. in Reston, Va., to develop distributed systems management products with multiple graphical user interface (GUI) options. A Legent product with the Galaxy capability embedded would allow users of workstations and PCs to set a runtime option to select a "look and feel" standard such as Open Look, the Open Software Foundation's Motif, Microsoft Corp.'s Windows or OS/2 Presentation Manager GUI.

"This allows us to develop the application once for a platform and give the user a choice of the look and feel he would like on that platform," said Murray Berkowitz, director of enabling technology at Legent.

Legent will also incorporate Pipes Platform from PeerLogic, Inc. in San Francisco in its products to give users greater interoperability in heterogeneous environments. Pipes is a communications tool that can span dissimilar operating systems, processors and network protocols.

As with the Galaxy implementation, Legent products incorporating Pipes will use a standard application programming interface across all platforms. Combined with a built-in "naming service," Pipes-fitted applicatioos will be able to transparently find and access diverse servers in the network, whether they run under MVS, OS/2, Unix, DOS/Windows or Novell, Inc.'s NetWare, Legent said.

> "THE OPEN systems planning arena is one where users are crying for planning directions and products. These things let Legent write and maintain one set of code and then say, 'Let many blossoms bloom.'"
>
> PETER KASTNER
> ABERDEEN GROUP

Pipes also provides a "context bridge" that will enable Legent products to employ protocol-independent messaging so users can transparently access internetworks employing diverse protocols such as Transmission Control Protocol/Internet Protocol, NetBIOS and Systems Network Architecture/LU 6.2. "It will give end users a broader reach in terms of what they can bring to the desktop," Berkowitz said.

Legent did not say which products will first have the capabilities enabled by Galaxy and Pipes, but he said development work is under way in products for software management, data center management, production control and resource management.

Blind faith

David Gruzeski, senior systems programmer at General American Life Insurance Co. in St. Louis, where a oumber of mainframe Legent products are used, said he welcomes Legent's move to distributed computing but knows little of the details. "I have justified a PC on my desk because I know these things are coming from them, and we want to be positioned for that," he said.

"The open systems planning arena is one where users are crying for planning directions and products," said Peter Kastner, a vice president at Aberdeen Group in Boston. "These things let Legent write and maintain one set of code and then say, 'Let many blossoms bloom.'"

"Legent is actually making it possible to restrict the number of options users have to consider. It gives them the certainty that they are not going to have to face complex choices," said Peter Burris, director of commercial systems research at International Data Corp. in Framingham, Mass.

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Concerns go beyond E-mail API

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — Many users taken aback by the mudslinging keynote speech that Lotus Development Corp. President Jim Manzi delivered at the Electronic Mail Association's (EMA) annual conference last week said more imminent messaging challenges are on their minds than the long-controversial mail-interface issue Manzi grudgingly tried to resolve.

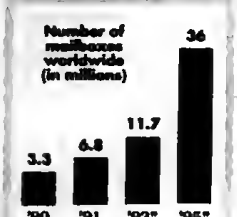
Somewhere amid his rankling of competitor Microsoft Corp., Manzi managed to break down a major barrier to the proliferation of mail-enabled applications by announcing a partial truce in the long-standing mail interface dispute (see story at right). The move should help fuel the development of mail-enabled applications.

But users and developers cited issues such as mail-engine interconnectivity, public electronic-mail network interoperability, messaging-oriented business reorganization hurdles and the need for global mail directories as concerns they want to resolve before they embark on groupware development.

"Common APIs are necessary for groupware but worrying about them now is putting the cart before the horse," said the E-mail administrator of a large networking company who asked not to be identified. "We first need to get our different mail platforms to talk to each other without the loss of functionality that happens when you communicate through a gateway."

Delivering the mail

The LAN-based E-mail market is expected to grow dramatically over the next several years



Includes LAN-based workgroup and E-mail software products (not service)

*Projected

Source: International Data Corp.

Forrest Conrad, manager of system programming at Teradyne, Inc. in Boston, agreed. "Getting E-mail platforms to talk to each other is the biggest issue, particularly from an administrative point of view. Once a message leaves our [Digital Equipment Corp.] All-In-1 mail system for another system, I have no way to track that message," he said.

Mail application programming interfaces (API) will eventually figure into the equation, observed Joseph Caruso, director of corporate systems and technology at American Express Co. in New York. "But we need to knock down organizational barriers in enterprise business process re-engineering first," he said.

Caruso, who is involved with in-house development, acknowledged that common mail interfaces under development by an industry group as well as the move to integrate Microsoft's and Lotus' competing mail APIs "at least give us a place to start" with groupware.

Global firms wishing to electronically communicate with outside business partners face an interoperability problem among value-added network (VAN) providers, according to Donald M. Gilbert, director of information systems at the American Petroleum Institute. "At this point, you simply can't send a message overseas to a VAN that isn't yours."

Gilbert said he understands this is because of a lack of contractual arrangements among the network providers.

Consistent, enterprisewide directory services continued to be a frequent topic of discussion at EMA. Some companies, such as New York-based global advertising agency Young & Rubicam, Inc., are leveraging Lotus's Notes database-oriented groupware platform to build their own.

Senior editor Elisabeth Horwitt contributed to this report.

Manzi miffs Microsoft with VIM, MAPI plans

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — In a scathing keynote address at last week's Electronic Mail Association's annual conference, Lotus Development Corp. President Jim Manzi trounced competitor Microsoft Corp., saying it embodies the reasons users are frustrated over the plentiful lip service being paid to "openness."

In using the dais to denigrate Microsoft's efforts with competing groupware standards and products, Manzi demonstrated that vendor politics are continuing to stall user progress toward harmonious networking.

Manzi's tone succeeded in burying the good news he had to deliver: that Lotus will tweak its messaging interface specification for mail-enabled applications, also backed by six other large industry players, to work with a competing interface from Microsoft [CW, Oct. 26].

The announcement followed Manzi's descriptions of Microsoft's new Windows for Workgroups and its Windows-oriented application programming interface (API) as "proprietary" and "a Trojan horse that will cause confusion and prevent users from committing to other products and operating systems."

Lotus embraced Microsoft's specification by allowing applications written to the Lotus-backed Vendor-Independent Messaging (VIM) interface to work with Microsoft's Messaging Application Programming Interface (MAPI) applications.

Users and developers have encouraged such API blending to fuel mail-enabled application availability. The combined APIs will offer richer functionality than those that will come out of the Common Mail Call set under construction by the X.400 Application Programming Interface Association (XAPIA), analysts said.



John Owens

Jim Manzi called Windows for Workgroups 'a Trojan horse that will cause confusion'

"Since Microsoft hasn't written VIM interfaces for MAPI, we're going to do it for them, free of charge to everyone," Manzi said.

"Manzi's presentation made it unclear whether the VIM companies will support the common calls from the XAPIA," said Joseph Caruso, director of corporate systems and technology at American Express Co. in New York. Manzi "seemed to just create more confusion" over the whole API issue, he said.

Similarly, Robert Forhertz, an electronic-mail project engineer at Monsanto Co. in St. Louis, said, "What we thought was coming together is falling apart. We wanted Lotus and Microsoft to work together [for one API]. With what Lotus is proposing, you'd have APIs calling APIs; we want one set of calls."

Daniel Petre, vice president of Microsoft's Workgroup Division, said, "[Manzi] does not understand the concept of extending the operating system to provide workgroup capabilities to a wide range of users."

Dave Whitten, an analyst at Gartner Group, Inc., a consultancy in Stamford, Conn., added: "Bottom line, Manzi said that we've come to a conclusion on the API and we're not going to be rolled over by Microsoft."

IBM users show preference for pure TCP/IP over APPN

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — Strenuously denying that it is responding to the threat of the Advanced Peer-to-Peer Interconnect (APPI) Forum and its SNA-over-TCP/IP scenario, IBM made some major concessions last week toward a more open, affordable and TCP/IP-supportive version of its Advanced Peer-to-Peer Networking (APPN) protocol.

Even so, IBM's peer-to-peer version of Systems Network Architecure (SNA) seemed to be losing rather than gaining ground, with users and vendors at last week's Interop '92 show demonstrating a marked preference for pure Transmission Control Protocol/Internet Protocol (TCP/IP).

There was also a strong interest in APPI, the budding de facto standard proposed by Cisco Systems, Inc. as a way to let IBM SNA and APPN devices communicate over a TCP/IP backbone.

While IBM is positioning APPN as a migration path to peer-to-peer environments for SNA users, it also sees the protocol as a de facto standard for high-speed, multiprotocol, local-area network-to-LAN connections, IBM spokesmen said.

"We are demonstrating APPN over TCP/IP on the floor now and will ship it shortly, so why do you need APPI?" asked IBM general manager Ellen Hancock.

Releasing all specs

Addressing recent allegations that it would keep control of APPN Network Node and charge hundreds of thousands of dollars for the use of APPN Network Node source code, IBM announced that it would publish all specifications needed to build APPN Network Node in the next few months, at a nominal cost.

In addition, IBM said it would publish the management information base for managing APPN resources via Simple Network Management Protocol.

However, companies that built APPN-based products would still have to pay patent fees priced in the tens of thousands of dollars, said Rick McGee, director of architecture and telecommunications at IBM.

IBM will sell a fully tested set of core APPN code for $400,000.

Rather than lose major customers to TCP/IP, IBM has begun to work aggressively with customers to integrate their TCP/IP and SNA networks.

For example, IBM is working with Boeing Computer Services to implement SNA applications on a TCP/IP network, Hancock said. A Boeing spokesman confirmed that the project was under way.

A later release of APPN, APPN+, will be optimized to make use of the 1M- to 45M-byte bandwidth of frame relay, while a later version will converge with the Asynchronous Transfer Mode standard, according to McGee.

Working out details

Last week Cisco handed over responsibility for the standard to the APPI Forum, which met last week to set up a game plan for delivering a working APPI protocol by mid-1993.

Uphill fight

IBM must work hard to convince IS managers that its APPN protocol is worth implementing in heterogeneous environments

200 IBM mainframe sites in the U.S. were asked which of the following statements best described their attitude toward APPN:

- **Important because it meets all networking needs — 7.5%**
- **Just for IBM networks — 8%**
- **Interested, but not sure — 37.5%**
- **Not interested — 20%**
- **Happy with SNA — 27%**

Source: International Data Corp.

While Cisco has proposed the initial APPI protocol, the final version will incorporate the best of all members' suggestions, a Cisco spokesman said.

Wells Fargo Bank's Wholesale Services is using both TCP/IP and LU6.2, according to Roy Camblin, a senior vice president. But "my personal choice is TCP/IP," Camblin said.

One comany already committed to APPI is Chevron Corp. Nancy Mason Vandell, a senior communications analyst for technical services, said at the forum meeting that she is leading her firm to implement APPI across all of its Cisco routers.

User quest

Interop attendees searched the conference floors for two types of solutions to their multivendor networking problems. One group sought broad vendor support for one common networking standard; the other wanted products that provide application and systems interoperability across a broad range of protocols.

Roy Camblin, a senior vice president at Wells Fargo Bank's Wholesale Services business, is in the latter group. "We have a combination of TCP/IP and [IBM] LU6.2, and I tell a group when they ask for an either/or decision, 'You'd better support both.' " Not counting on IBM's "many promises" in terms of a peer-to-peer, standardized version of SNA, "I'm seeing standards more as a list of options," Camblin added.

Boeing Computer Services currently supports seven networking protocols and is "urging users to go to TCP/IP," said Darwin Perkins, a network manager at the company. A "major driver" for this move: Boeing is going to a centralized network management system and has found nothing that can handle a broad range of network protocols, Perkins said.

Great West-Life Assurance Co. in Manitoba, Canada, is one of many companies using multiprotocol routers to handle a broad mix of TCP/IP, Novell, Inc. IPX and SNA, according to Nick Van Der Zweep, an assistant technical support manager.

However, the company is still working out some glitches in Cisco Systems, Inc.'s IBM Synchronous Data Link Control implementation on its router, according to Van Der Zweep.

Another area of user disappointment has been with the most promising of the stagnating Open Systems Interconnect protocols, X.400 and X.500, for E-mail and corresponding directory services. Gordon Craig, vice president of the Houston NetWare Users Group and LAN administrator at the Texas Rehabilitation Commission in Austin, Texas, explained, "Novell said it has no intention of supporting X.500 because it is too slow."

Without that option from Novell, he said, he is weighing Banyan Systems, Inc.'s StreetTalk directory service for NetWare, which was recently announced, against waiting for NetWare Version 4.0, slated to ship early next year.

One area in which cooperation seemed to be budding was network management. DHL Worldwide Express communications architect John Payne said that increasingly, standards-based application interfaces of IBM's NetView/6000 and Hewlett-Packard Co.'s OpenView will let DHL implement the network and Unix systems management applications on either platform, depending on user preference.

Standards fights vex users

CONTINUED FROM PAGE 1

Group, a consulting firm in Salt Lake City.

Meanwhile, users "don't want to hear APPN vs. TCP/IP vs. IPX;" they just want their applications to communicate transparently, Burton said.

Users echoed that sentiment. Monsanto Co. in St. Louis, for example, is struggling to interconnect a broad range of workgroup-enabled applications in the absence of a truly standard electronic-mail application programming interface (API) with broad vendor support, said Robert Forhetz, project manager for E-mail.

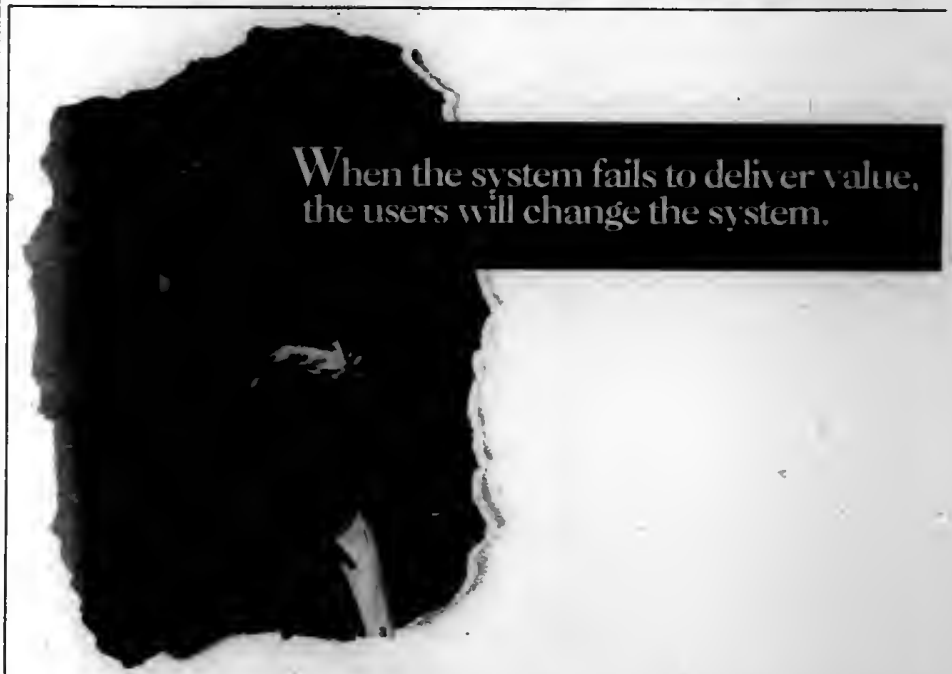
Vendor behavior at last week's show was not calculated to raise user hopes of future harmony and interoperability. Among the more notable fracases were the following:

- Lotus Development Corp. Chief Executive Officer Jim Manzi, while bad-mouthing rival Microsoft Corp., announced that Lotus would translate both its own E-mail API and that of Microsoft (see story page 14).
- IBM and the Advanced Peer-to-Peer Internetworking Forum, while taking potshots at each other's efforts, both promised to let users mix and match IBM's Systems Network Architecture and Transmission Control Protocol/Internet Protocol.
- MCI Communications Corp. announced the first long-distance Switched Multimegabit Data Service product and criticized AT&T and Sprint Corp. for refusing to "give users a choice" (see story page 16).

The spectacle of vendors criticizing one another in the name of standards sickened information systems and network managers, who had come to the conferences looking for help in their struggles to integrate multivendor computing and networking environments.

"It was like a barroom brawl," according to one attendee of the Lotus/Microsoft fracas.

Senior editor Joanie M. Wexler contributed to this piece.



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NEWS SHORTS

HP replaces best-selling printer

Hewlett-Packard Co. replaced its market-leading LaserJet III printer with the LaserJet 4 and LaserJet 4M, 600 dot/in. printers, priced at $2,199 and $2,999, respectively. The new 8 page/min. printers can work six times faster than the LaserJet III. They can also handle up to 850 pages of paper. The redesigned printers are smaller and lighter than the LaserJet III. HP also cut prices on older LaserJet models.

Piracy takes a dive



The Software Publishers Association (SPA) reported a huge decrease in software piracy last year but also noted that the industry still lost more than $1 billion to stolen software and illegal copying. The SPA said the drop — a 41% decrease from 1990, to $1.2 billion — resulted because of changing market trends, industry enforcement and education. Nonetheless, the SPA also said that today, one in five PC software programs is an illegal copy.

Low-volume discounts from Lotus

Lotus Development Corp. expanded its licensing options last week to include more discounts for low-volume purchases. A License Pack program is targeted at current users and will give them a discount of up to 20% when they license more copies of the currently installed software. A Reseller Sales Volume Purchase Plan provides discounts of 20% and higher when a customer purchases a minimum of 50 copies of a Lotus application. Previously, these discounts were provided to users who bought "in the thousands," a company spokesman said. The spokesman said the industry will "probably see more" discount programs coming from Lotus.

Quattro users unite

A Quattro Pro users' group was launched in Southern California last week, and it claims it is the first major group in the U.S. focused on providing support and information on the Borland International, Inc. spreadsheet. The group's acting president is Wolf Kadavanich at Motek Information Systems. The kickoff meeting with be held Friday in San Diego.

Microsoft, Borland recast tools

Microsoft Corp. has been demonstrating Visual Basic 2.0 in preparation for its release early this month. The updated development tool reportedly produces code that averages 35% faster execution speeds than Version 1.0 and creates 30% smaller files for larger applications. Not to be outdone, Borland International has unveiled Borland Pascal with Objects 7.0 and Turbo Pascal 7.0, the latest versions of the company's popular Pascal development tool line.

Price signs OS/2 commitment

IBM last week officially announced its deal with Price Waterhouse that calls for it to act as the accounting firm's worldwide operating systems provider. The deal covers 35,000 PCs throughout Price Waterhouse and involves the purchase of more than 20,000 copies of OS/2 2.0. IBM will also provide Microsoft's MS-DOS and Windows to the company.

Short takes

Sequent Computer Systems, Inc. in Beaverton, Ore., is scheduled to announce today clustering capabilities for its Symmetry line of multiuser systems with support for the parallel server option in **Oracle Corp.**'s forthcoming Oracle 7.... **Mips Technologies, Inc.** today will unveil its newest reduced instruction set computing chip, the 64-bit, 150-MHz R4400 microprocessor.... **Retail chain Software Etc.** and information network **Prodigy** last week began offering free access to Prodigy's political databases to visitors at any one of Software Etc.'s 265 stores nationwide.... **Red Brick Systems, Inc.** in Los Gatos, Calif., unveiled its data warehouse software for HP's HP/Apollo 9000 Unix servers.... **NCR Corp.** has announced the release of StarPro Enterprise Messaging, an enterprisewide electronic-mail and messaging system. The system runs on a Unix platform and interconnects with other vendors' mail systems via the X.400 E-mail and X.500 directory standards, the company said.... Former **Timeplex, Inc.** President Dewaine L. Osman has returned to **Unisys Corp.** as vice president of corporate planning.

Wireless E-mail to span U.S.

RAM Mobile Data, Lotus show plan for hooks to packages such as CC:Mail

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — RAM Mobile Data last week filled in some details of its pioneering effort to bring electronic messaging to travelers who want to stay productive when a telephone jack does not happen to be handy.

The company announced that wireless commercial electronic mail services are now available on its nationwide packet radio network [CW, Oct. 26] and said it plans to provide the service to 90% of the U.S. urban population by June 1993.

RAM Mobile Data also announced a Premier Partners program with several vendors, including Lotus Development Corp., to develop wireless hooks to existing E-mail-based packages and services.

Two of the partners, Performance Systems International, Inc. (PSI) in Reston, Va., and RadioMail Corp. in Menlo Park, Calif., said their network access services are already available for hooking into the radio network. PSI's PCILink, which bridges users into networks such as the Internet, CompuServe, MCIMail, AppleLink, SprintMail and AT&T Mail, is available in 50 U.S. cities, the company said.

RadioMail's gateway service assigns users a radio mailbox and address; when mail arrives at the address, it is translated into such receiving formats as X.400, Internet, Lotus' CC:Mail and public mail systems.

Other Premier Partners in various stages of linkage development are AT&T EasyLink Services; Ericsson GE Mobile Communications, Inc., which makes the key radio modem component of wide-area wireless communications; Go Corp.; SimWare, Inc.; and WordPerfect Corp.



Digital Equipment Corp. and Hewlett-Packard Co. previously announced wireless messaging development efforts.

Most users said they are generally bullish on the idea that technology breakthroughs will make remote users more productive.

"I'm interested in anything that would grow and incent our population of telecommuters," said Peter Brown, director of technical services at Electronic Arts Canada, an entertainment products maker based in Burnaby, British Columbia. "The simple benefit is creating more available work time."

But, as with any new technology, availability of service is an issue for some users. For example, Gordon Craig, local-area network administrator at the Texas Rehabilitation Commission in Austin, a government entity with agencies throughout Texas, noted the general scarcity of communications services in Western Texas.

"If something can't cover the entire state, then it's not a solution for us. This makes nonwired solutions difficult." For example, he currently cannot get simple paging services from Austin to El Paso. "If I can't get paging, how can I expect messaging?" he asked.

Meanwhile, Lotus detailed some of its plans for bringing wireless communications to its mail-oriented products. Lotus' CC:Mail Remote, whose desktop version is installed on more than 2 million desktops today, will hook into the RAM Mobile Data network "sometime in 1993," said Glenn Kaufman, business development manager at Lotus' portable computing group. In addition, the company is "looking toward Notes for wireless links," he said.

Lotus will tweak CC:Mail for wireless users by equipping it with filtering capabilities. Such features, which exist today in sophisticated desktop mail packages such as Beyond, Inc.'s rules-based BeyondMail, would allow users with limited time and laptop memory to be selective about the volume of electronic information they download.

Kaufman also said Lotus will equip CC:Mail Remote with encryption as an added measure of security to that now embedded in the RAM Mobile network. He noted that the RAM Mobile partnership is likely to be the first of such efforts with other wireless network providers.

MCI breaks new ground with SMDS offering

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — MCI Communications Corp. last week announced what is said to be the first Switched Multimegabit Data Service (SMDS) offering from a long-distance carrier.

MCI's Virtual Private Data Service HyperStream reportedly supports SMDS' "connectionless" networking, which enables users to interconnect with those at other sites and companies on a casual basis, MCI spokesman Paul Weischelbaum said.

In contrast, frame-relay services require defining a permanent, point-to-point connection between communicating sites, according to Weischelbaum.

Compared with MCI's switched T1 and T3 services, which take three seconds to set up a call, HyperStream provides instantaneous on-demand call setup, Weischelbaum said.

MCI's announcement potentially expands SMDS from a regional offering limited to the territory of individual local-exchange carriers to a transnational networking service, MCI said.

Not in the cards

Sprint Corp. said it has no plans to offer SMDS but will provide gateways to interconnect users' SMDS equipment over its frame-relay and Asynchronous Transfer Mode services.

AT&T said it will provide a similar gateway if customer demand warrants.

Both carriers pointed out that SMDS is a U.S.-only standard, while frame relay is an international standard.

Scheduled for general release in mid-1993, HyperStream will support data rates of between 64K and 45M bit/sec.

Pricing will be on a usage-sensitive basis, with a price cap of 120% of a fixed-rate monthly price, MCI said.

Customers can send data over existing T1 lines without special equipment as long as they are transmitting at speeds less than 1.5M bit/sec., MCI said.

MCI can then allocate some of that T1 bandwidth to HyperStream and some to other types of service that are currently available.

Bandwidth on demand

The NASDAQ hopes to use HyperStream as a way to provide 56K bit/sec. bandwidth on demand to users throughout its network, the exchange said in a prepared statement.

The technologies will allow NASDAQ to add capacity automatically for "temporary use during peak periods," the exchange said.

NASDAQ plans to have contract negotiations and pilot testing of MCI's service completed by January, according to the exchange.

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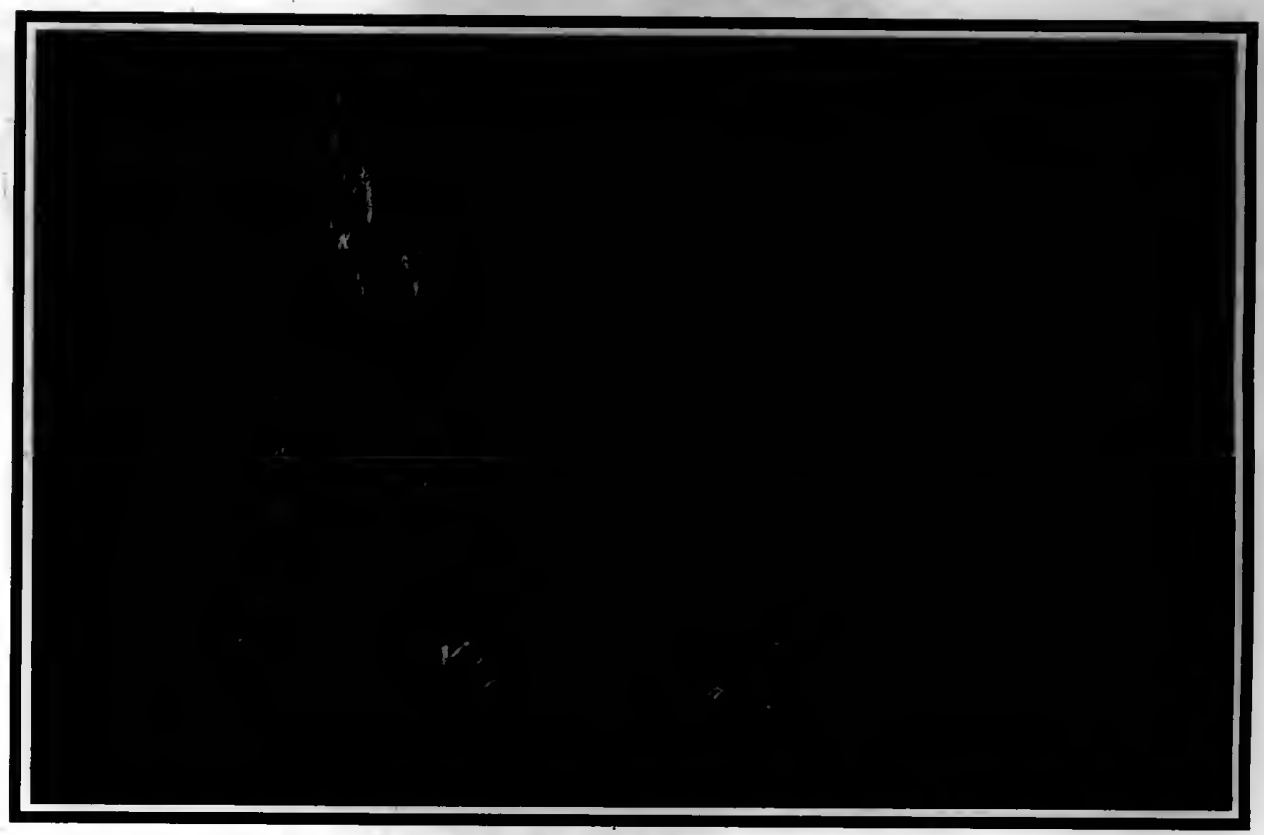
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Bank reworks outsourcing pact

CONTINUED FROM PAGE 1

management in an effort to right itself.

Fred Cisewski, the bank's MIS director and senior vice president, declined to reveal specific price cost values implemented in what he termed a "refinement" of the contract. Merrill Lynch & Co. analyst Steve McClellan has estimated the original deal at $120 million, and a source close to Bank South "characterized the cost savings as modest."

A spokeswoman at ISSC said she could not comment on the details of the contract.

What Cisewski did say was that the changes touched largely on "some of our pricing parameters." Those changes were necessitated by a number of factors, chief among them the following:

- The bank shrunk, but its processing needs increased.
- The Cost of living did not go up as much as anticipated.
- The bank is moving to a distributed processing architecture.
- Now that the bank is recovering, it has less ambitious growth plans.

The enormous transaction volume generated by loan analyses increased the bank's processing needs "more than if the bank had grown," Cisewski said. "When you have asset-quality problems, you have to do a lot of portfolio analysis that requires manipulating a lot of data."

What is not clear is whether this turn of processing events played in the bank's or IBM's favor. If the agreement was made less expensive, as the source indicated it was, the old formula most likely had worked for IBM.

Ladd Willis, executive vice president of First Manhattan Consulting Group, a New York-based bank consultancy, pointed out that bank outsourcing deals are typically priced by CPU use or a predetermined rate tied to certain activities, such as loan processing or direct deposits.

Contracts can get out of whack for the client or supplier if usage runs into areas not accounted for originally, or if the supplier's costs unexpectedly change from factors such as technology changes, he said.

"That's what happens in these bank outsourcing contracts — the charging algorithms might end up overcompensating or undercompensating the supplier," Willis observed. He said he "can only speculate" that it was this type of imbalance that threw the Bank South deal off kilter.

"There was an invalid assumption on both sides about what our proccessing requirements would be based on our business size," Cisewski said. "We tried to tie processing to the growth of the bank, but that was invalid."

If the bank had been paying on a CPU use basis, not only did it then end up paying for more processing than it had anticipated, but it was doing so from a weaker financial position.

Cisewski said IBM and Bank South have "changed some of the pricing parameters," including introducing measures that accommodate "some processing alternatives that didn't exist three years ago," such as factoring in more PC-oriented activity.

Those changes were not tied into transactions per se, he said, declining to elaborate on what they were tied into.

A distributed system under development at the bank will draw data from the mainframe and shuttle it via a Systems Network Architecture network through local-area networks and servers among employees who will be able to get more timely information on client activity, Cisewski said.

The restructured deal also gives Bank South back some money that it had paid because of overestimates of how high the cost of living would rise. It is common in outsourcing deals for the vendor to tie its cost/price formula into its projections for the consumer price index.

One source said Bank South had earlier this year explored a radically different set of options that would have broadened the scope of IBM's responsibilities by giving the computer giant control of PC maintenance, training and purchases. A Bank South policy committee of the bank's five top executives decided against those measures in August because the new management team, led by Chairman Robert Guyton, wanted to focus on developing a strategic plan for the bank's core business, the source said.

Cisewski said the change disproves a theory promulgated by outsourcing doomsayers that long-term deals lock a customer into rigid parameters. The original contract contained provisions for changes, he said.

Customer sues IBM for support lapse

BY JOHANNA AMBROSIO
CW STAFF

ATLANTA — Just as IBM is attempting to make its mark as a premier services organization, a customer has filed a $150 million lawsuit alleging that IBM did not provide adequate staffing to finish a project on schedule.

The customer, First Financial Management Corp. (FFMC) in Atlanta, provides data processing and other services to some 800 small and midsized banks through a subsidiary called Basis Information Technologies, Inc.

The lawsuit, filed in U.S. District Court on Oct. 5, alleged that FFMC and IBM contracted in December 1989 to jointly build a banking software system that would be rolled out to FFMC's 800 customers. IBM "has failed to deliver" the new system, court documents said.

An IBM spokesman declined to comment on the matter.

Donald Sharp, an FFMC senior vice president, said, "IBM has not fully conformed to the original agreement. But we're not interested in the money. We're just trying to get the project completed."

According to the FFMC complaint, "IBM caused the project to fall behind schedule almost immediately by failing to assign adequate numbers and quality of personnel to the project." The development part of the project was supposed to have been completed by December 1990.

Also, the lawsuit alleged, because the new system is not fully operational and the old Unisys Corp.-based software cannot be run on the new IBM mainframe, FFMC will need to extend the lease on its old Unisys computer. Further, "IBM now insists that FFMC must purchase additional hardware from IBM beyond the equipment specified in the contract," the suit said.

DEC restructuring takes form

CONTINUED FROM PAGE 1

lington, Vt., and Springfield, Mass. The moves will result in the layoff of 670 workers.

Internal sources said final details of the restructuring are still being ironed out, though the company is under pressure to resolve organizational issues soon. "The structure alone won't do it — what's important is being more responsive to customers and figuring out whether we're building the right things in the right order and that it fits together with existing products," said one internal source familiar with the discussions.

The new structure is expected to go into effect in January.

A DEC spokesman confirmed details of a new model for industry business units, but said it is a work in progress. He refused to speculate as to when and how such a model might be made public by the company or when it might go into effect.

"The general reaction is that if DEC can execute this, it will be good for the customer — the individual business units will be driving the development of products rather than engineering," said Jeff Killeen, national local user group chairman of the Digital Equipment Computer Users Society.

But the new structure may also mean greater limits on resources out in the field. Since the vertical business units will be responsible for their own profitability, costs for support will come out of each group's sales pocket.

Field expertise will be planned and budgeted according to perceived need, but there may be unforeseen technical demands for which the resources may not be immediately available, according to Lynn Berg, program director of midrange computing services at Gartner Group, Inc., a market research firm based in Stamford, Conn.

Another potential impact for customers is the increasing pressure to move products through indirect channels, as opposed to the DEC sales force.

Last month, DEC began restructuring the way its sales force is compensated, and some sales units had their projections increased by $1.5 million, to $3.5 million.

"When one of us goes to the [DEC] office, the salespeople swarm around us," said Tony Corrato, a consultant at Mile High Information Systems, Inc., a Denver reseller. "They can't physically get to all the accounts themselves and have to focus on the highest paying ones, which means they have to push [the rest] off onto someone else."

The competitive pressure is also creating greater responsiveness on the part of some DEC sales representatives servicing larger accounts. "DEC is realizing that there are other manufacturers that have products that we need, and has become much more cost-competitive," said Robert Cyr, data center manager at PacifiCare Health Systems, Inc., a health maintenance organization based in Cypress, Calif.

"They always said they wanted to be partners in our business; it seems that they may now be trying to achieve that," Cyr added.

A $150 million outsourcing prize

Systems integration and consulting services figure prominently in DEC's proposed restructuring plans.

To drive home the point, the company last week trumpeted a recent $150 million outsourcing win from TransAlta Utilities Corp. in Calgary, Alberta, an $800 million utility.

DEC is running TransAlta's data center of four VAX 9000s and roughly a dozen VAX systems on several VAXclusters. The five-year outsourcing deal with DEC is part of TransAlta's overall plan to outsource the parts of the business that others can operate more efficiently, according to Tony Ansdell, director of information systems at TransAlta. Although the company will save a "nontrivial but not enormous amount" of money from the deal, the major objective was to bring in DEC's expertise, he said.

"With the speed of change going on in information technology, we were struggling to keep up with it and wanted to bring in someone who knew it well," Ansdell said.

Most of the 70 data center employees are now employed by DEC, and others were placed elsewhere within TransAlta. The equipment will stay on TransAlta books, and DEC will pay the systems' rental fees. In turn, DEC will charge users for CPU time.

"We're still in the teething problem area. We're trying very hard to work out a partnership rather than a supplier/customer relation, which means that we are making joint decisions," Ansdell said.

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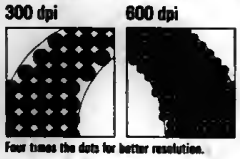
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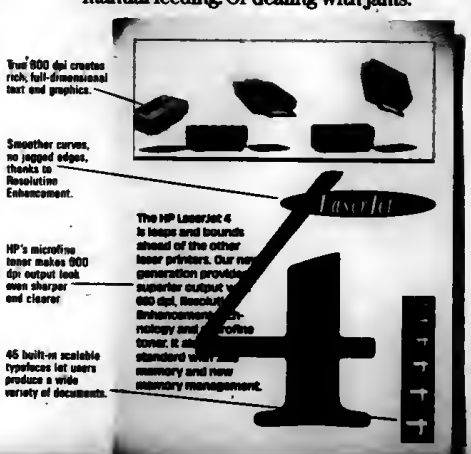
With 45 scalable typefaces built into the printer, users can produce a wide variety of documents. Without hassling with downloading or accessory cartridges. Or buying additional typefaces.

More speed, more trays, more flexibility.

Thanks to a new RISC processor, tuned vector graphics and faster I/Os, the HP LaserJet 4 also sets new standards for speed. It even prints many 600 dpi graphics at a true 8 pages per minute. It's faster on networks, too.



With 2 MB of memory built in and new internal memory compression algorithms, virtually all 300 dpi and many 600 dpi documents print from standard memory. Two standard paper trays, with a total capacity of 350 sheets, and an optional 500-sheet tray let users keep printing without constantly reloading different sizes and types of paper. And the optional 75-capacity power envelope feeder saves them from manual feeding. Or dealing with jams.



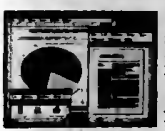
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Mixed environment compatibility. Faster Windows.
The LaserJet 4 is very much at ease with most languages and personal computing platforms. Automatic switching lets it switch between HP's PCL 5 printer language and optional PostScript Level 2 software from Adobe. Hot I/Os allow different hosts to be connected simultaneously.

Optional JetDirect cards provide LAN connections to Ethernet, TokenRing, TCP/IP and LocalTalk/EtherTalk. This makes it easy to plug into just about any network, including PC and Mac LANs. And to get really fast network performance.

To optimize the LaserJet 4 for Windows printing, we codeveloped some breakthroughs with Microsoft.® Including Windows 3.1 TrueType fonts and rasterizer built in to make sure your users get fast, WYSIWYG printing. The fast Windows driver with HP-GL/2 vector graphics also enhances printing speed.



Several popular software drivers are included: Windows, WordPerfect and Lotus. As well as the new HP Explorer PC utility software, which provides a printing tutorial to guide your users through set-up and operation of the printer's new features.

All this makes the HP LaserJet 4 printer supremely simple to plug-and-play. As you'd expect, it also offers complete document and software compatibility with the HP LaserJet III printer.

Setting the standard in price, too.
With all these advances and more, you'd expect a big jump in price. Quite the opposite. At just $2,199,* the HP LaserJet 4 printer lists for less than the printer it replaces. And, of course, it comes with pace-setting HP quality and reliability.

Call **1-800-LASERJET** (1-800-527-3753), **Ext. 7133** for the name of your nearest authorized HP LaserJet dealer.† And ask for a print sample to see just how great the output looks.**



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ASK CEO takes helm at Ingres division

BY JEAN S. BOZMAN
CW STAFF

ALAMEDA, Calif. — Trying to infuse Ingres Products Division's U.S. operation with the spark of his recent European successes, The Ask Cos.' chief executive officer last week took the reins of the relational database division.

Pier Carlo Falotti, who joined Ask last summer after building Digital Equipment Corp.'s European unit into a $7 billion business, told *Computerworld* he needs to restructure Ingres' management to boost the firm's lagging U.S. market share.

"They have been losing market share in the U.S. in license revenue for the last 12 months," even though Ingres sales rose slightly, said Charles Phillips, a vice president of research at SoundView Financial/Gartner Group, Inc. in Stamford, Conn.

The U.S.' lag in Ingres business is noticeable. Ingres' U.S. business grew by just 3% last quarter, compared with 47% worldwide revenue growth since last year's first quarter, said Kenneth Burke, a principal at Pacific Growth Equities, a San Francisco brokerage firm. "In six quarters, they haven't made meaningful progress in getting the North American business cranked up," Burke said.

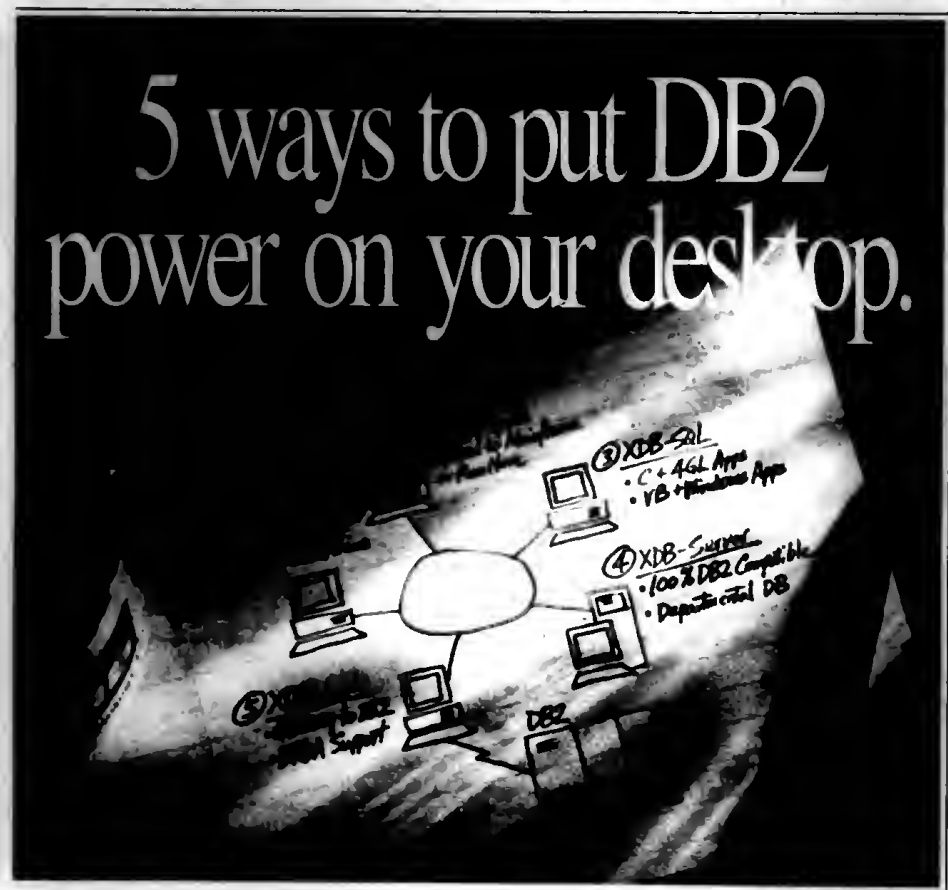
Falotti did not say how long he would remain president. Dennis McGinn, Ingres' president since 1991, was reassigned as executive vice president of strategic partnerships and business development.

Fast attack

Current and past presidents of the North American Ingres User Association (NAIUA) were critical of the speed with which Ingres has attacked its long-standing weakness in marketing.

"It's hard to see what the grand strategy is or should be," said NAIUA President Dwight Coles, who is slated to attend a planning meeting with Ingres executives in mid-November. "Users are starting to express concern about using Ingres because they don't see the market share or the advertising," he said. Coles also said product introductions have slowed to a trickle.

Users have faulted senior Ingres management for failing to convince managers at the largest U.S. corporations that Ingres could be a strategic product. "We've seen some improvement over time, but the change hasn't been as rapid as we would like," said Eric Palmer, former NAIUA president and chief executive officer at Palmer and Associates, Inc., a consulting firm in Atlanta.



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Concurrent restarts engine

BY MARYFRAN JOHNSON
CW STAFF

OCEANPORT, N.J. — After a lengthy silence in the marketplace and a painful financial face-lift, Concurrent Computer Corp. resurfaced last week with a revitalized strategy and nearly four dozen new products for its real-time, crash-proof computers.

"They've done quite a credible job of recovering," said Terry Bennett, an Infocorp analyst in Portland, Ore. That recovery is relying on expanded software and service offerings as well as a dual hardware direction — assuring the future of its proprietary 3200 series line while beefing up its Unix-based Series 7000 line.

During the past two years, the $225-million vendor cut costs by $75 million, shrunk its employee count from 3,500 to 1,900 and managed to turn the past three quarters into profitable ones after a string of money-losing ones.

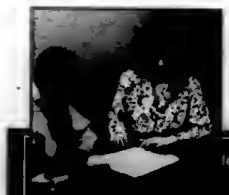
Back on its feet

"We're relieved to see that they're viable again," said John Baris, president of Concurrent's Interchange Users Group and director of computer systems and software at Yale University's experimental nuclear physics laboratory, which uses three of the 3200 series machines.

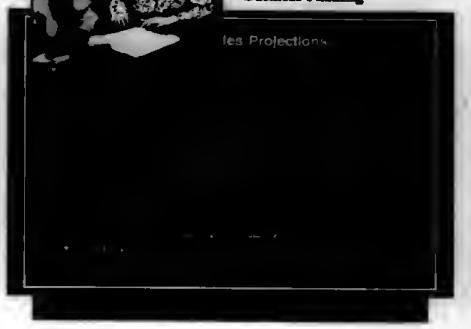
Concurrent's niche is real-time, fault-tolerant computing in life-and-death applications, such as nuclear power simulation and missile guidance, or financially critical operations, such as state lotteries and stock trading systems. During the past 25 years, Coocurrent has built up an installed base of 32,000 systems.

At prices ranging from $5,000 to $150,000, the new products include a family of Motorola, Inc. 68040-based systems for the Series 7000 real-time Unix minicomputers, two new models in its proprietary Series 3200 line and new graphics display subsystems. The company also unveiled a host of productivity tools, networking and communications products and a broader array of services.

"We feel very strongly that they are moving in the right direction," said Tony Pastore, principal systems engineer at the radar systems division of Electronic Warfare Associates in Marlton, N.J., which purchased four Series 7000 systems a year ago.



Business Planning



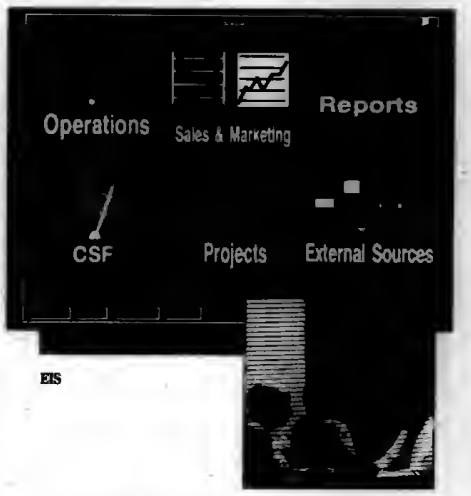
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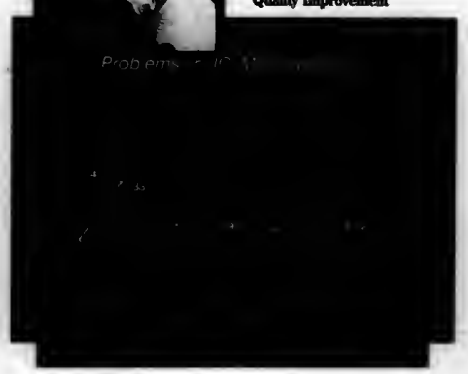
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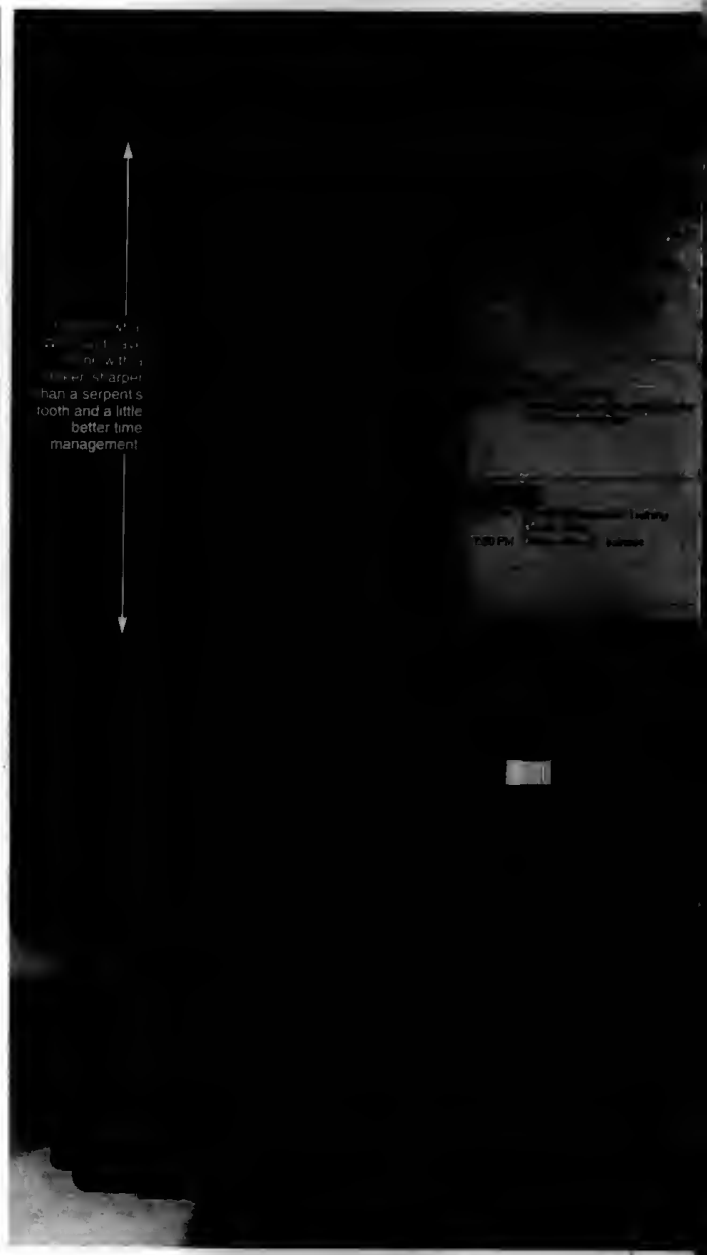
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ADVANCED TECHNOLOGY

TECH TALK

Grand challenges

■ The National Science Foundation in Washington, D.C., has awarded its first set of grants for research on the nation's "grand challenges." One of the grants went to Robert Berwick at MIT, who will coordinate a team of researchers trying to design high-performance computers that can "see, move and speak." The multidisciplinary team will include biologists, mathematicians, computer scientists and engineers.

Full-size flat panel

■ Canon, Inc. is expected to release next month what it calls the world's first commercial ferroelectric liquid crystal display (FLCD). The 15-in. flat-panel FLCD offers a medium-resolution monochrome display, but Canon said it will release high-resolution monochrome and color 15-in. panels later in 1993. Canon is promoting the FLCD as a more practical alternative to the expensive, hard-to-produce thin-film-transistor (TFT) active-matrix LCDs currently used in high-end color notebook PCs. An FLCD offers high resolution and comparable contrast to a TFT display while featuring a simpler electrode structure that promises relatively low-cost, high-yield mass production, according to Canon.

Setting its sights

■ In the spirit of Star Trek, supercomputers at NASA's Ames Research Center in Mountain View, Calif., will try to seek out and analyze sounds no one has heard before. Starting last month, the laboratory began its search for faint radio signals that might indicate life on other planets. The decade-long survey of 400 billion stars will use radio telescopes in Southern California and Puerto Rico. Started on the 500th anniversary of Columbus' voyage to the New World, the project continues the 1960s Search for Extraterrestrial Intelligence. Organizers said they hope the computers hear something by 2001.

Technology firms look homeward

Three industries join forces to get a foot in the door of the home multimedia market

BY ELLIS BOOKER
CW STAFF

Shooting at the same target over the years, telephone, cable television and computer companies have independently explored ways to bring multimedia into the home.

These efforts hint at a shared belief that mass-market, multimedia information and entertainment services are an enormous business opportunity. To date, however, none of the sectors has managed to crack the home market.

Recently, representatives from the three industries formed a group to develop a common architecture for delivering multimedia services over a variety of communication networks. Called First Cities, the project is being organized by Microelectronics and Computer Technology Corp. (MCC), an Austin, Texas-based research and development consortium.

Analysts called the move a significant step toward the creation of multimedia network standards and infrastructures.

"It's what amounts to a game plan for where multimedia is going, and it's the first time I've seen it spelled out as succinctly by a group of players," said David Palmer, a senior consultant at Grassroots Research, a San Francisco, Calif.-based market research firm specializing in telecommunications.

The MCC project will be a test bed for various multimedia information and entertainment products.

"Originally, the focus of [this] program was how to build infrastructures in cities, making them into the information hubs for the next century," said Bruce Sidran, MCC vice president and executive director of First Cities. "Now the focus is the applications for creating the marketplace."

Besides MCC, the 11 participants in the group are: Apple Computer, Inc.; Bellcore; Bieber-Taki Associates; Corning, Inc.; Eastman Kodak Co.; IBM and Apple's joint venture, Kaleida Labs, Inc.; North American Philips; Southwestern Bell Technology Resources, Inc.; cable company Sutter Bay Associates; Tandem Computers, Inc.; and US West.

MCC officials contend that First Cities is seeking a common architecture for multiple network media — fiber optics, cable and telephone lines — and that it may also develop "hybrid" services using two or more transmission facilities.

Yet for now, a large cable TV or entertainment provider is notably absent from the group's roster.

"Right now, there isn't a lot of incentive to involve the cable companies because [their networks] don't offer the appropriate bandwidth, and the installed base is the same that the telcos have," Palmer said.

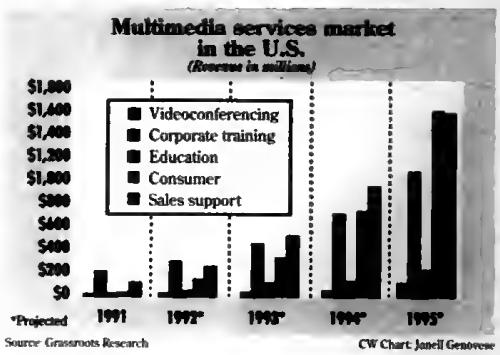
But Sidran argued that the group is definitely not a "telephone company" project.

"I've been espousing the belief that we don't want to pick winners and losers between the cable and the phone industries; [instead] we need some kind of comprehensive architecture," Sidran said. He added that First Cities fully expects to add members from major entertainment and cable companies in the future.

For Apple, which has been investigating home delivery of multimedia for some time, participation in First Cities means it will be able to build equipment and applications to the group's multimedia network standards as they evolve.

"Without network services, we can't build network devices," said Mike Liebhold, manager of media architecture research at Apple's advanced technology group.

The creation of multimedia networks, he added, will require the input of many interests — networking and computer companies, as well as providers of transaction and entertainment services, will all need to be involved.



Source: Grassroots Research

CW Chart: Janell Genovese

Fuzzy borders

"No one or two companies have the depth or breadth of expertise to pull something like this off," said Liebhold, who predicted the arrival of a host of new products that "blur the definition of computers, telephones and TVs."

The first set of applications that First Cities will consider will be multimedia teleconferencing, interactive games, entertainment on demand, shopping and transaction services, customized multimedia information, distance learning and health care.

The First Cities project will be implemented in three phases: a business plan; development of an architectural framework and experimental pilots, slated for early 1993 to December 1994; and the licensing or sale of First Cities technology and concepts to local information and network providers for commercial services in early 1995.

IBM's multimedia universe

Through its Kaleida Labs multimedia joint venture with Apple, IBM will share in the results of the MCC/First Cities initiative. But, quietly, IBM has also made substantial investments of its own in networked multimedia and is reportedly close to forming a new company to provide interactive information to businesses and homes.

Published reports put IBM's commitment in the new company at more than $100 million and indicate IBM is seeking cable TV, telecommunications and media partners for the venture, which would provide video, software and interactive games and services.

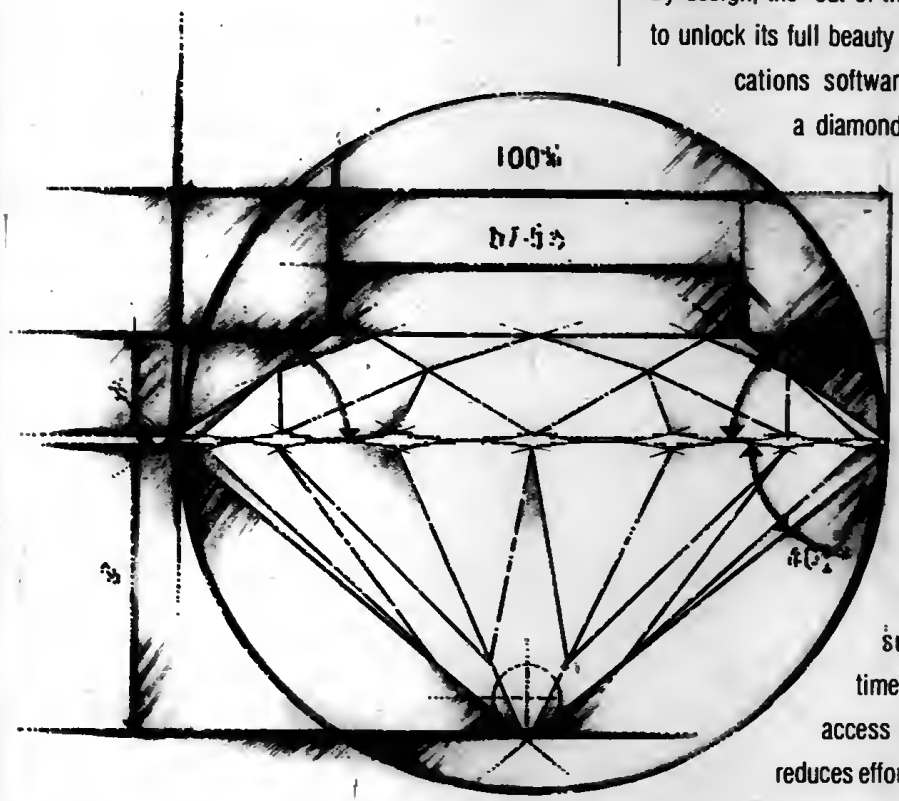
At the heart of IBM's plans are its technologies for managing and distributing various data types over networks. IBM refers to these technologies as the Planet architecture. IBM has specified two implementations of Planet: Orbit for fiber-to-fiber networks and Comet for fiber-to-coaxial networks.

In conjunction with Rogers Communications, Inc., Canada's largest cable operator, IBM is testing Orbit at banks in Toronto. A second fall trial, with BellSouth Corp. as a partner, will provide services to Tennessee schools and offices.

Ultimately, services for home subscribers are planned, although IBM said it will target business applications first.

ELLIS BOOKER

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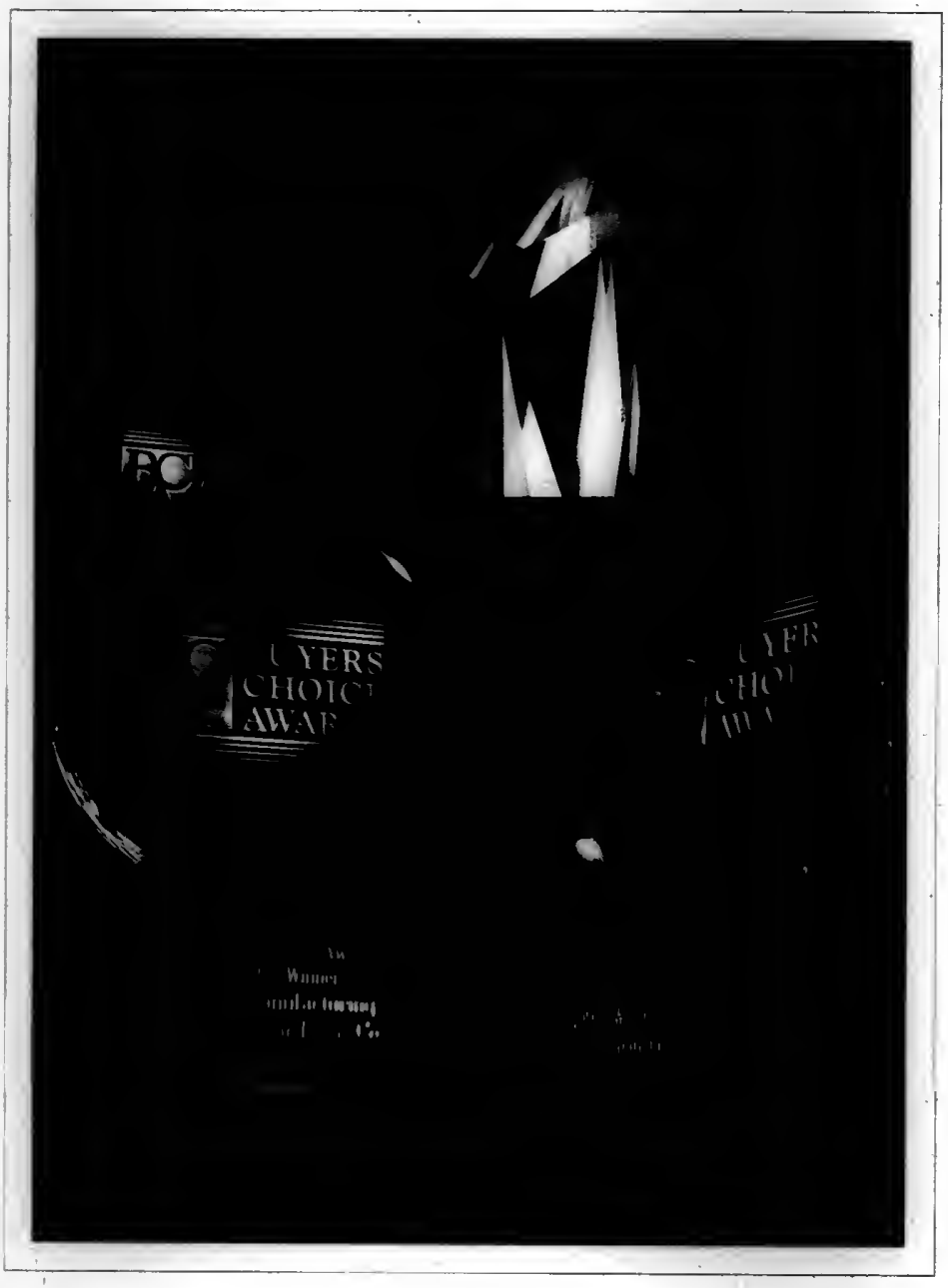
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EDITORIAL

Change agent



It took me roughly three years to set up a tete-a-tete with Computer Associates Chairman Charles Wang a couple years back. For a gift, I bought him a satin warm-up jacket of the Boston Red Sox — a team that hasn't won a World Series in more than 70 years.

"This," I said, handing him the box, "represents the only thing I've waited for longer than an appointment with you."

Thankfully, he had a sense of humor and grace in accepting the present. As he showed in that and subsequent meetings, he also has a temper, a keen and shrewd intellect and an extraordinary drive — characteristics that could be turned on and off without a segue or without what we in the journalism business call a transition. In summary, he is somewhat enigmatic.

Thus, it is not surprising that the giant software company he directs can also reflect a mercurial nature. CA at times has angered some of its biggest customers to the point where some have been very outspoken with their dissatisfaction. This tendency has been noted in this paper and other publications, as well as in market analysts' reports.

On the other hand, other customers swear by the company and its products. Charles Wang is one of the more visible software executives at customer sites, and this attention is what customers increasingly demand.

Earlier this year, we picked up on a lot of unhappiness and anger in the user community about CA's pricing and licensing policies. The company insisted our stories were off the mark and that we'd asked the wrong questions of the wrong people.

Then, in the spring, CA reached a dynamic and innovative domestic licensing scheme with a major customer, paving the way for the announcement last month [CW, Oct. 19] of a flat-fee worldwide agreement with Citicorp. That deal, as well as a fixed-price deal struck last month with the U.S. Postal Service, portend a major pricing and licensing overhaul planned for next week that will put CA clearly ahead of its competition in liberal licensing agreements.

CA's actions on this very critical issue have drawn only applause from its customer base — even from some users who have been dissatisfied with the company. CA is now the risk taker in a market of risk-averse vendors.

Moreover, the company is acting from a position of strength. It has strung together several strong financial quarters in terms of sales and profit. Prudent companies have long been characterized as not being lulled by success but rather as being nervous that it will recede and acting aggressively to avoid that situation. This is what CA has done with the key licensing issue.

Is this the CA of the '90s: aggressive and proactive, tough and customer-driven? Certainly the user base would hope so.

Bill Laberis

Bill Laberis, *Editor in chief*



LETTERS TO THE EDITOR

There's no such thing as a good virus

The article "Can a 'good' virus be a bad idea?" [CW, Oct. 5] was misleading. It stated that the user community was "divided" over the issue. To the contrary, after doing computer security work with more than 100 organizations, I can tell you the user community is emphatically opposed to viruses.

From a secure systems design perspective, it is undesirable for unknown pieces of software to be doing things behind the scenes without the knowledge and acquiescence of both users and systems designers. Otherwise, the number and seriousness of potential side effects are just too great to tolerate.

A well-managed change control process requires that all changes to software and related system files be specifically approved prior to execution in a production environment. To promote "good" viruses is like promoting "good" nuclear weapons. . . .there is no security without stringent control.

Charles Cresson Wood
Sausalito, Calif.

Coverage of candidates lacks objectivity

Your editorial about technology in the election is a perfect example of the media's abuse of power during this year's election [CW, Oct. 26]. Using your position to influence public opinion while pretending to be objective is precisely why people distrust the press.

I find it very suspicious that you consider a vote for Perot to be a protest vote when a survey by your own publication shows him favored. Strange that an editorial on technology omits the only candidate who made his fortune in the computer industry.

Sometimes, what you don't say can be just as important as what you do say. In the future, if someone on your staff doesn't like a candidate, perhaps they should just say it directly.

David E. Long
Englewood, Colo.

Editor's note

Last week, my electronic mailbox was stuffed with letters from readers irate over the fact that Andre Marrou, presidential candidate from the Libertarian Party, was omitted from our presidential poll of IS managers [CW, Oct. 26]. Ordinarily I'd just plead "convention" in that the Libertarian Party is not included in any major polls. But given the response to our omission, our polls in the future will have the Libertarian choice on the ballot as well. — Bill Laberis

Why a monopoly?

Although I wholeheartedly agree with the conclusion of "Gimme access" [CW, Sept. 28], I want to suggest that Paul Gillin reconsider the answer to his opening question.

As he indirectly points out, the reason we have a local telephone monopoly to "bust up" is because of big government's prohibition of private carrier competition!

Bruce M. Hobbs
Alhambra, Calif.

Stick to the subject, not politics

Regarding "Clinton's civilian DARPA idea criticized" [CW, Oct. 5]: The facts presented are simple and indisputable: Gov. Bill Clinton proposed an idea, and his election opponent, President George Bush, attacked it.

The article devoted one paragraph to the proposal, and the other seven paragraphs, the lead sentence and the headline were devoted to Bush's attack on it.

Was the news the proposal, which you noted "computer companies generally supported," or was it Bush's attack?

Regardless of my — or the reporter's — political leanings, the article shows either reporting strongly biased toward Bush or a desire to accentuate the negative.

Each detracts from the story's news value, which would have been enhanced by more details of what Clinton actually proposed.

Gabriel Goldberg
Chantilly, Va.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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Don't let stress get the best of your staff

JEFFREY OLSZEWSKI



The polls are in. Stress on the IS professional is up in a big way this year, and the light at the end of the tunnel is pretty dim. This means that those of us who are managers are under pressure to show exactly what kinds of leaders we are.

It's pretty clear what is causing the increase in stress levels. What is less obvious is how to fix it. A "rightsized" IS force is being barraged with urgent requests from a "rightsized" user community that has to do more with less. Deadlines are tight, and systems now get an unnerving amount of management attention.

IS professionals, managers and technicians have always flourished under a certain amount of stress. But there is a big difference between the kind of stress that keeps adrenaline flowing and makes the day exciting and the type of relentless stress that is the result of unrealistic expectations.

It is the responsibility of middle management (what's left of us, that is) to reduce the bad stress while maintaining the good stress.

I first saw this kind of stress management in action several years ago, when I was working as a programmer on a high-pressure project. The way our manager dealt with the stresses of that project helped all of us do a better job. It wasn't until later, after having worked on a number of other projects for a number of other managers, that I realized how rarely attention is paid to this issue. Now that I'm a manager myself, I try to follow the lead of that first good teacher.

Here are some of the lessons I learned from him:

•Distinguish between venting and griping. A certain amount of venting should be expected. Venting allows people to get things off their chests, so they feel ready to attack the task at hand once again.

Griping and bickering are different. These kinds of continuing negativity are damaging to morale and cannot be tolerated.

•Be sensitive to the effects of stress on various personalities. Every staff member is an individual and will have both a different tolerance for stress and a different way of expressing feelings. It's up to us as managers to make sure that we find out how high-stress situations are affecting everyone.

I can clearly recall one instance that brought this home to me. After several weeks of heavy overtime, I was approached by a model employee. She barely made it into my office before the tears began to flow.

This wasn't a person who voiced complaints easily, and I hadn't sensed the frustration she was feeling. I should never have let the situation get that far without noticing what the situation was doing to her.



Wayne Vincent

•Don't let your best performers shoulder the whole burden. A balanced effort is important. It can be very damaging to have star performers overloaded while everyone else is leaving on time.

•Don't let overload become a way of life. A colleague of mine once told me that when overtime begins to seem like the normal way to operate, you're in trouble. Overtime should be an occasional measure invoked when extra effort is required to get a particular job done.

•If expectations are unrealistic, say so. If the due dates that are being imposed are unrealistic, we owe it to ourselves and to our staffs to let upper management know. This isn't necessarily a great career enhancer, but neither is losing half your staff to burnout.

If it turns out that there really is no cause for alarm, you'll be able to get out from under some of the stress you've been carrying around.

And even if a problem does exist, but you are overruled, the fact that you tried to do something may improve morale among your staff members. Nobody likes to see the manager strike out, but it's a lot better — and less stressful — than working for someone who doesn't understand your reality.

Olszewski is data processing manager at Beloit Corp. in Lenox, Mass.

Think twice before you topple the control tower

HOWARD GLASSMAN



There once was a manager assigned to reduce his firm's travel costs.

To get started, the manager visited the company airport. His first view was of all the big iron parked along the ramp. "Do we really require something so big, complex and expensive in order to travel?" he asked himself. "What if we could fly in smaller planes that were just as fast and just as well-constructed?"

The executive listed the cost factors that go into operating big planes. In doing so, he discovered a large and sophisticated infrastructure had evolved to ensure that planes were properly maintained and tested, crews were properly trained, schedules were met and so on. Much of this struck him as wasteful excess.

In the end, the executive reported to his management that travel expenses could be cut by implementing a fleet of departmental planes. Departmental pilots could be hired for less, and the company could avoid the expense of complying with all of the bureaucratic regulations imposed by the guys in the control tower. In fact, the manager added, most of the people in the control tower could probably be fired when departments began handling their own transportation.

Lack of coordination might involve a little more risk, but the company could afford to lose a plane and its passengers every now and then — unless of course the passenger was a mission-critical member of the staff.

Sound foolish? Sound familiar?

Worth the risk?

Downsizing from mainframes to midrange or PC LAN environments can reduce costs and give users some freedom from the bureaucracies that have, for so long, controlled the glass house. But has the risk been adequately evaluated? Have the necessary compensating controls been put into place?

Moving an application from one environment to another is not, in and of itself, justification for reducing controls — just as flying a small plane does not justify noncompliance with federal flight regulations.

Downsizing is going to occur, and it should. Smaller machines are gaining power, and there is an upper limit to how much power most organizations require. If this upper limit drops into the envelope of small system capability, then sustaining a mainframe environment makes little sense.

Consider this

Before the move is made, explicit decisions must be made to safeguard company resources.

•If you need and have a backup and recovery methodology on the mainframe that can guarantee recreation of your organization's source code to any date in the past five years, then you must make sure you can do this in the downsized environment as well.

•If you have a 24 to 7 user support ratio in the data center, then you must continue to provide that level of service.

•If you have an operations staff whose function it is to ensure that all required processing occurs in proper sequence and on schedule, and that information is available to users within a certain amount of time, you must continue to meet those commitments in the downsized environment.

Organizational structures and operational procedures that have evolved in the mainframe environment are generally well-tuned to this task. A less structured, more ad hoc user-operated environment may not be.

A recent article in *Computerworld* mentioned an insurance company that was downsizing [CW, Aug. 24]. One of the enticements listed was, "Batch jobs, like posting premium payments, can be activated by programmers from a PC at home."

Knowing as I do the kinds of controls that are required for posting programs in a bank, I have to wonder if the person who made this statement would like to be on a flight through stormy weather, knowing that the navigation was being handled by someone dialing in from home.

Glassman has been involved in the information security field for nine years and is currently manager of information security at Pacific First Bank in Seattle.

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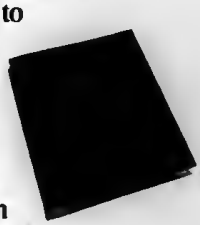
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IN BRIEF

Apple ships System 7.1

■ **Apple Computer, Inc.** has announced the shipment of System 7.1, the latest version of its operating system for the Macintosh line.

System 7.1 includes WorldScript, which allows it to be used with "double-byte" languages such as Japanese and Chinese, which require two bytes for each character of text. System 7.1 also comes with a fonts folder for type integration, modular support for new Macintosh models, integrated TuneUp support and a bundled version of QuickTime 1.5.

■ **Austin Computer Systems** said it will ship PCs that use the Video Electronics Standards Association (VESA) VL-Bus local-video bus. Austin will use the VESA standard in its high-level desktop PCs. The systems were designed to accept VL-Bus adapter cards that will provide local-bus Small Computer Systems Interface and local-area network interfaces.

The Austin 486/DX2-66 VLB system with a 200M-byte integrated electronics hard drive, 4M bytes of random-access memory and a 14-in. Super VGA monitor will cost $3,190.

Users eyeball OS/2 slimdown plan

BY ROSEMARY CAFASSO
CW STAFF

IBM's concept of a streamlined OS/2 2.0 is good news for users, although some customers said they were s little unclear about what IBM would do to make this concept a reality.

"It depends on what they take out," said George Oliver, manager of information delivery technology at the Royal Bank of Canada. "If it's functions, no, we're not interested."

IBM plans to release the slimmer OS/2 in early 1993 and said the product will operate more effectively on a 4M-byte system.

Before OS/2 2.0's arrival last year, IBM had discussed a plan to introduce s so-called Lite version of the operating system with fewer features. This time, however, the goal is to rewrite some of 2.0's code and remove code redundancies so functions remain the same but the operating system takes up less space in memory.

With the smaller version, OS/2 would also become s more realistic choice for portable and laptop computers.



While IBM currently states that OS/2 2.0 requires only 4M bytes of memory, the company also says that to run it with several applications and to use the multitasking feature, s user would really need at least 6M bytes and, in some cases, up to 8M or 12M bytes.

"We are not fully addressing the problem we have at 4M bytes," said Lois Dimpfel, IBM's Personal Systems director at the OS/2 Programming Laboratory in Boca Raton, Fla.

Yet Ronan McGrath, vice president of information systems and accounting at Canadian National Railways, was a little uncertain about the 4M-byte goal because "the PCs coming in now are coming in at 8M bytes anyway."

Dimpfel said 4M-byte machines "are still the sweet spot of the industry, especially in the laptop and notebook environments. They are delivering at 4, and when you deliver them preloaded [with 2.0], you want them preloaded with software that works well."

Dimpfel said IBM will not remove features from OS/2 but instead plans to fine-tune it by recoding portions and getting rid of redundancies. She also said the goal is not simply to cut the 3 million lines of code but to write many of them better.

All in good time

"Sometimes, you can make code better just by thinking harder," said Paul Pignatalli, an OS/2 2.0 reseller and owner of The Corner Store. "With time, you can always do s better job."

Oliver said an IBM official told him two years ago that programmers who wrote 2.0 had done "s good job of shrinking the kernel." At that point, IBM said it could do more shrinking but stopped because the code was pretty good. "So, maybe they are revisiting it now," Oliver added.

IBM will also tune performance to improve system response time. These fixes started shipping with the Service Pack that was released last week. Additional boosts will come by year's end with the point release of 2.0, Dimpfel said.

The streamlining, however, focuses on the actual operating system mechanics. Reducing 2.0's size means more programs and files can be stored along with it in main memory. That requires fewer trips to disk to fetch things — tasks that are now bogging down the system.

Intel outlines chip plans: 'Pentium' to ship in Q1

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — "Pentium" was probably not the other name Shakespeare had in mind for his rose, but Intel Corp. liked it well enough for the chip that has been otherwise known as the 586 and the P5.

Intel recently said Pentium is due to hit the market late in the first quarter of 1993, concurrent with systems that use it. The Pentium plan was one piece of an Intel strategy that Intel President Andrew Grove outlined to the New York PC Users Group recently.

The company plans to unveil 25 new 1486-class processors next year, all 3.3V products that support Smart Power Management — Intel's scheme for reducing power consumption on its chips. Grove said the chips would range from the high-end DX2 processors down to 486SL products that would run in subnotebooks. These chips will also be aimed at desktop systems for power-conscious PC buyers, he added.

Industry sources said they expect the first processor, s 486SL, to appear next week, although Grove would not confirm those reports.

Pentium, a 32-bit chip that will run at 66 MHz, is expected to go into servers initially, where its near 100 million instructions per second performance will have more attractive price/performance than desktop machines. IBM, Compaq Computer Corp. and Digital Equipment Corp. are likely to announce systems that use Pentium when it is introduced.

Previously, Intel said it would avoid the 586 moniker for its 486 follow-on processor because numbers cannot be trademarked. Grove charged that when competing chip makers such as Advanced Micro De-

Continued on page 38

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Integrated card hits fax/modem market

BY CHRISTOPHER LINDQUIST
CW STAFF

SANTA CLARA, Calif. — National Semiconductor Corp. is slated to hit the PC communications retail market this month with an integrated card that includes data, fax, "business audio" and voice capabilities.

At a list price of $279, the TyIN 2000 card drops squarely into the standard fax/data modem market and undercuts competing integrated cards, such as The Complete PC's Complete Communicator, which lists for $499 and does not include the voice annotation features of National Semiconductor's product.

What differentiates TyIN 2000 from the competition, for the moment, is the business audio feature, which allows users to add spoken comments to Microsoft Corp.'s Windows documents and then transfer these files via fax, modem, network or disk.

The audio can be input with either a microphone or a standard telephone handset and can be played back through the integrated speaker, external speakers or the handset.

However, fancy hardware specifications do not guarantee success in a market where leapfrogging standards tend to leave products that are even a few months old in the dust. To help ward off quick obsolescence, National Semiconductor has designed the TyIN 2000 to be software upgradable — meaning that as standards change, users will be able to download software to upgrade the card.

Upgrade-conscious

That feature caught the eye of industry analyst Julie Groll at Dataquest, Inc. in San Jose, Calif. "One thing that caught my attention was commitment to upgrade users to any standards that come out," she said.

The TyIN 2000 also allows users to turn a PC into a voice-mail system, including multiple mailboxes. Mailboxes can be password-protected and accessed remotely via a Touch-Tone phone.

In addition, the card includes 9.6K bit/sec. send and receive fax capability, a 2,400 bit/sec. data modem and automatic call sensing to determine whether an incoming call is voice, data or fax. A scanner can also be attached to the card.

Groll noted that while National Semiconductor has a lead in the integrated communications market for the moment, other products will arrive soon. "At this point, it is fairly unique and the price is low," Groll said. But, "I would expect to see other products similar to this to follow."

Intel outlines its strategy for 486 chip successor

CONTINUED FROM PAGE 37

vices, Inc. used the number 386 in product names, it damaged Intel and "misled" the market.

Grove told the New York user group that IBM has a license to make the Pentium chip for its own use, as it does with current Intel microprocessors. IBM has used this right to build custom versions of Intel's 386SX and 486SX processors, although IBM would not comment on what it might do with Pentium.

Grove also hinted at a new product for Intel.

"For video computing ... we need to have the ability to have software playback — to bring video playback to all computers," Grove told the audience.

Analysts said Intel is likely to show at Comdex/Fall '92 a software product that will let users record and manipulate sound and motion video images and create enhanced electronic mail and other applications.

SX in the works?

Intel officials denied reports that the company is working on an SX version of Pentium that will make it easier for systems vendors to build Pentium-based systems. Paul Otellini, Intel's vice president and general manager of the microprocessor products group, said, "Pentium will be a family over time, but I was very surprised to read about this product since it doesn't exist."

Sources close to the company said Intel is working on a Pentium OverDrive processor that will allow chip-level upgrades from the 486DX to the Pentium processor when it becomes available. Several vendors, including DEC, Compaq and AST Research, Inc., have already designed the new Pentium OverDrive socket into their existing OverDrive-ready systems.

In response to an audience question, Grove denied persistent rumors that Intel has been unable to meet demand for its 486 processors, forcing it to parcel them out to select vendors. Spot prices on the chip gray market have jumped $100 recently due to these reports.

Securities analysts who attended a briefing with Grove earlier in the day said he had conceded that Intel was close to being unable to meet demand.

Today's Macintosh wasn't just created for your users.



Olivetti, Toshiba to unveil notebooks at Comdex/Fall '92

BY MICHAEL FITZGERALD
CW STAFF

Bells and whistles are a staple of the PC industry, but some notebook advances look like they will bring a whole orchestra into play.

For instance, Toshiba Corp. is working to build paging capabilities into future notebook products, according to sources close to the company. The technology may be shown at the Comdex/Fall '92 show later this month, according to industry observers, although Toshiba declined to comment on those reports.

Toshiba is negotiating with PageMart, Inc. in Dallas for the pager technology — said to be dubbed ReadyMessage — that would allow the user to have paging system alerts ring through the laptop system and appear on the notebook screen.

The one-way messaging from this unit could allow voice-mail messages to be handled the same way and could eventually lead to two-way page-and-respond systems.

Sources said Toshiba is close to bringing these ReadyMessage-capable systems to market. The systems are said to use Intel Corp.'s soon-to-be-announced I486SL processor.

Decisions, decisions

Toshiba is said to still be weighing whether to build in the pager unit or handle it as a Personal Computer Memory Card International Association (PCMCIA)-based add-in device. Toshiba refused to comment, and PageMart did not return phone calls.

Sources also said Olivetti Office USA will use Comdex to mark the U.S. debut of Olivetti's Quaderno, a 2.25-pound, 4- by 6-in. combination notebook and voice-processing system.

The Quaderno, which shipped in Europe in midsummer, records voice messages on its hard drive and allows for voice annotations to files.

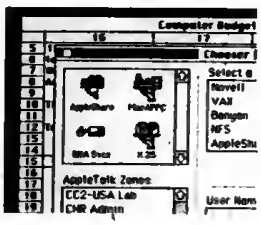
Keys on the system record, rewind, play and fast-forward as on a tape recorder. The product also has a built-in microphone and speaker and uses a digital signal processor from Analog Devices, Inc.

The hard drive holds 20M bytes of data, and the system uses a NEC Corp. V30 processor, an Intel 80286-class product. Four AA batteries power it. Pricing may be below $1,000 in the U.S., a source said.

An Olivetti spokeswoman confirmed that Quaderno will be at several booths at Comdex, including the PCMCIA booth, where some models will be given away to show attendees.

She said Olivetti has not decided if it will announce U.S. availability for the product at Comdex.

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TI, Grid color new portables

BY MICHAEL FITZGERALD
CW STAFF

Vendors continue to add color to their notebook product palettes.

The past two weeks saw Texas Instruments, Inc. and Grid Systems Corp. add their names to the list of vendors with color notebooks.

TI in Temple, Texas, brought out two color notebooks among its four new notebooks. All four TI products bundle Microsoft Corp.'s Windows 3.1 and are based on 486-class processors.

The TM4000 WinDX2/40 Color features a 20-MHz/40-MHz 486DX2 processor, 8M bytes of random-access memory and a 200M-byte hard drive. The price is $4,499.

The TM4000 WinSX/25 Color has 4M bytes of RAM and a 120M-byte hard drive. It costs $3,699. Both color notebooks weigh 6.3 pounds.

The 5.6-pound monochrome units include the TM4000 WinDX2/50, which features Intel Corp.'s 25-MHz/50-MHz 486DX2 processor, 8M bytes of RAM and a 200M-byte hard drive for $3,899. The TravelMate WinSLC uses TI's 25-MHz 486SLC and costs $1,999.

Grid, which is moving to Dallas from Fremont, Calif., introduced a 6.9-pound, 25-MHz Intel 80386SL-based notebook, the 1660C, with an active-matrix color screen, a built-in trackball pointing device and an optional docking station.

It will cost $4,495 with 4M bytes of RAM and a 125M-byte hard drive.

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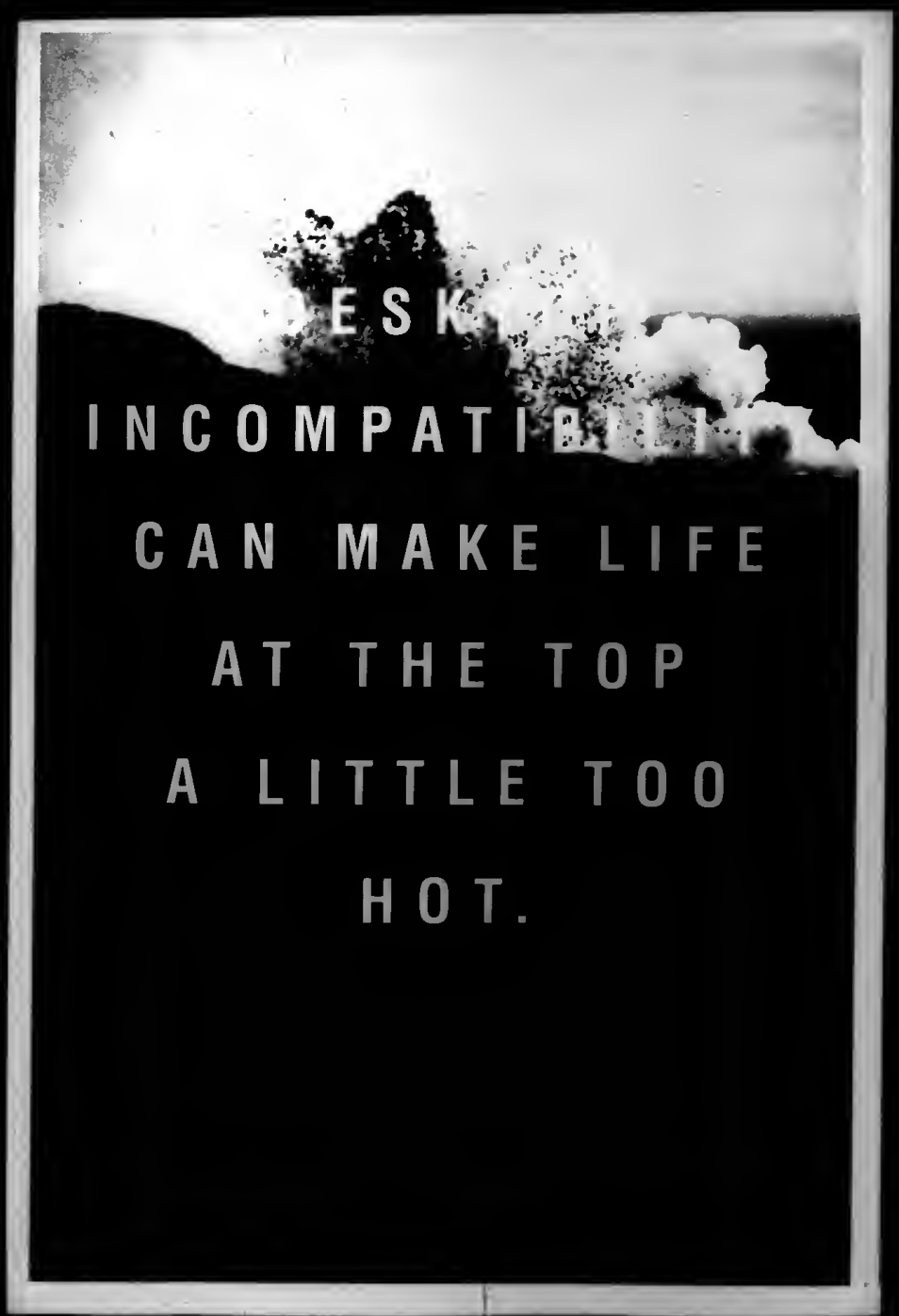
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The registration fee (in U.S. dollars) is:

- $895, if paid with a discount coupon (available to non-U.S.-based users and regional user group members only — contact your regional user group for details) prior to March 26, 1993.
- $995, if paid prior to March 26, (without a discount coupon).
- $1,095, if paid after March 26, or at the conference.

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The Outlook on Professional Computing
August 24, 1992

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— *LAN Magazine*, March 1992



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Vivace frees you from the tyranny of directories, subdirectories and sub-sub-directories. Just point your mouse and go — right to what you need.

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DECdirect

AT&T announces line of personal communicators

BY ELLIS BOOKER
CW STAFF

SANTA CLARA, Calif. — Bilbo Baggins could have used one on his adventures in Middle Earth: a tiny, lightweight gadget able to exchange voice, fax and electronic mail.

AT&T Microelectronics recently announced the first of its Hobbit processors, a family of high-speed, low-power microprocessors targeted at pen-based, mobile devices — what AT&T calls "personal communicators."

According to Dean McCarron, an analyst at In-Stat, Inc., a market research firm in Scottsdale, Ariz., AT&T's interest in the handheld/personal digital assistant market is matched by Intel Corp., VLSI Technology, Inc., Vadem and Chips and Technologies, Inc.

"It's fair to assume that every major semiconductor company is going to go after this market," McCarron said. He estimated that within five years, 20 million of these devices — using either chip sets or highly integrated single chips — will be sold annually. In 10 years, In-Stat predicted, 70 million of these systems will be sold annually.

The first Hobbit chip, the ATT92010, operates at 3.3V and achieves a performance level of 13.5 VAX million instructions per second (MIPS), AT&T said. This performance reportedly works out to 37 VAX MIPS per watt.

The Hobbit will be shown this month at Comdex/Fall '92, where AT&T promises to have several equipment manufacturers who will voice support for the new line. To date, only EO, Inc. in Mountain View, Calif., has publicly announced that it plans to use the AT&T chip set in a future pen-based system.

Other members of the Hobbit family include a system and power management controller for all devices in the chip set, a Personal Computer Memory Card International Association controller for memory and I/O and a peripheral controller and a display controller supporting both LCD and CRT-type displays. The Hobbit CPU costs $35 in quantities of 10,000, with the chip set costing less than $100, AT&T said.

NEW PRODUCTS

Software

Pilot Software, Inc. has started shipping Version 3.2 of LightShip. The product is a PC version of the company's visual information access system and runs under Microsoft Corp.'s Windows.

According to the company, LightShip 3.2 includes a more powerful and simplified menuing environment for building and implementing pull-down and cascading menus. Objects can be named on the systems screen, allowing them to locate and group related objects.

LightShip 3.2 costs $19,000.

Pilot Software
40 Broad St.
Boston, Mass. 02109
(617) 350-7035

Systems

Altima Systems, Inc. has introduced the Altima 325XL and the Altima 325SL notebook computers.

According to the company, the Altima 325XL is powered by Intel Corp.'s 80386SXL processor; the 325SL uses the Intel 80386SL chip. The 325SL offers advanced power management and 64K cache memory. Both models include 25-MHz speed, 2M bytes of random-access memory expandable to 4M or 6M bytes, a 3½-in., 1.44M-byte internal floppy disk drive and an 80M-byte hard drive.

The 325XL costs $2,399, and the 325SL costs $2,699.

Altima Systems
Suite 1050
1390 Willow Pass Road
Concord, Calif. 94520
(510) 356-5600

Sigma Designs, Inc. has introduced WinStorm, a Microsoft Corp. Windows-based video accelerator board.

WinStorm offers True Color video and 16-bit CD-quality sound. According to the company, the product includes interfaces for high-performance Small Computer Systems Interface CD-ROM, full duplex Musical Instrument Digital Interface, an internal 20-voice stereo synthesizer, several popular multimedia applications, standard IBM joystick and Sigma Designs' proprietary MultiMode Control Panel software.

The WinStorm multimedia display adapter comes with 1M byte of memory and costs $429.

Sigma Designs
47900 Bayside Pkwy.
Fremont, Calif. 94538
(510) 770-0100

Macintosh products

Virginia Systems, Inc. has introduced Version 1.0 of Sonar Image, a document imaging system designed for the Apple Computer, Inc. Macintosh.

Users can scan items such as letters, articles, depositions and briefs and recover the scanned documents at a future time, the company reported. An automatic optical character recognition feature enables users to search for anything in the scanned documents.

Users can then view or print the original image of the page or the recognized text in the document. Sonar Image provides a choice of three image resolutions, support for a variety of scanners, simple image input and an enhanced retrieval system.

The single-user price for Sonar Image is $2,195.

Virginia Systems
5509 West Bay Court
Midlothian, Va. 23112
(804) 739-3200

Peripherals

Dataproducts Corp. has introduced Jolt PS, a solid ink color printer.

The product incorporates Adobe Systems, Inc.'s PostScript Level 2 page description language and has a throughput rate of 2 page/min. for text.

According to the company, Jolt PS uses a Dataproducts engine and has a 24-MHz Weitek 8220 processor. A Small Computer Systems Interface port for hard drive connection is included, along with concurrent Apple Computer, Inc. AppleTalk/LocalTalk and RS-232 serial interface ports as a standard configuration.

Jolt PS costs $6,695.

Dataproducts
6219 De Soto Ave.
Woodland Hills, Calif. 91365
(818) 887-8000

Digital Equipment Corp. has announced the DEClaser 1152 desktop laser printer.

Standard interfaces are included that attach directly to Apple Computer, Inc. Macintosh and PC systems, or the printer can be configured in LAT networks, the company reported.

The 4 page/min. printer also includes Hewlett-Packard Co. LaserJet II and Adobe Systems, Inc.'s PostScript Level 2 protocols, 17 scalable PostScript fonts and parallel, serial and AppleTalk ports.

The DEClaser 1152 laser printer has 300 by 300 dot/in. resolution, a 6,000 page/month duty cycle and the ability to print on a variety of items, including envelopes and transparencies.

The introductory price for the product is $999.

DEC
146 Main St.
Maynard, Mass. 01754
(508) 493-5111

Software application packages

SalesLink Systems has announced Version 1.2 of SalesLink for Windows.

The product is a sales force automation software that has compliance with Microsoft Corp. Windows for Pen Computing.

According to the company, SalesLink for Windows incorporates an enhanced personal-information-management module that includes an agent capability designed to automate various tasks.

SalesLink for Windows costs $895 per user.

SalesLink Systems
1840 Oak Ave.
Evanston, Ill. 60201
(708) 866-0400

WINDOWS VIEW

Jesse Berst

The Quiche Factor



We work in a very technical profession. Yet many decisions are still based on emotion.

Consider Microsoft's Visual Basic. By any measure, Visual Basic earns a spot on the list of serious corporate development tools. In many cases, however, Visual Basic isn't considered because of the emotional baggage it carries.

I call this the Quiche Factor, after the book *Real Men Don't Eat Quiche*. In this case, however, the phrase is "Real programmers don't use Basic." (Yes, I know there are many fine women programmers. But you get the point.)

The Quiche Factor certainly hampered Walt Wikman, director of global delivery technology at A. C. Nielsen, the market research firm. Wikman is a fan of Visual Basic as a corporate development tool. "The toughest thing we've had to overcome with Visual Basic is the perception that it's not for real programmers," Wikman said. "People who've spent time learning C don't think a switch to Basic is a career-enhancing move."

That's too bad, because Wikman believes Visual Basic is "great for small, targeted apps." His firm has built an "engine" in C called the Nielsen Workstation. His programmers use Visual Basic to build applets on top of the engine, tailored to clients' special needs. Visual Basic fits their requirements "like a glove" because of its ability to create reusable custom controls.

I first woke up to the value of Visual Basic when I was a judge at the Windows World Open, *Computerworld*'s Custom Applications Contest. Many of the finalists built their applications in whole or in part with Visual Basic, leading me to conclude it was more than a hobbyist's tool.

Now is a good time to take another look at Visual Basic because Microsoft has just released Version 2.0. This new release comes in two flavors: the $199 standard edition and the $495 professional edition.

Microsoft has enhanced Visual Basic to answer the leading requests from customers. I visited the Visual Basic team recently and saw tapes of the focus groups they conducted. Here are a few of the things Microsoft added after listening to users:

- New debugging tools.
- Improved interface and a handy Tool Bar.
- Better support for development teams and third-party CASE tools.
- Improved performance. "We took a reasonably sized app and converted it to Version 2.0 in about a half hour," Wikman said. "We didn't do anything else and we got it to run about 30% faster immediately."

The professional edition has been further enhanced with IS needs in mind, including additional tools for workgroup and database access applications.

What's the verdict on Version 2.0? Based on his work with the beta-test version, Wikman said he is pleased. "It's not as powerful as the C environment," he cautioned. "If you're a commercial developer who wants to build a spreadsheet, you wouldn't use Visual Basic. But it's a great way to prototype or to put small apps together in a hurry because it's so easy to use."

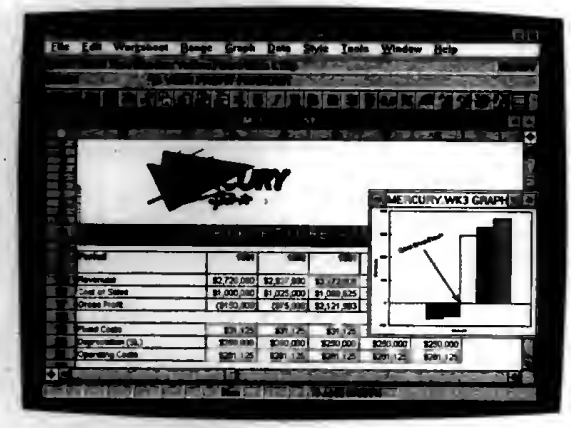
What about the Quiche Factor? Wikman said he solved it by making his people compete against nonprogrammers. "If a nonprogrammer using Visual Basic could put together an app faster than the professionals, then it obviously meant that they needed to take a look."

Most in-house development shops should give Visual Basic a look. In addition to the reasons cited above, the Basic language appears to have an important future. Access, the soon-to-be-released database from Microsoft, uses Basic as its programming language. What's more, Microsoft is building a new "Object Basic" that will appear in all of its products and will also allow you to create cross-application solutions — that is, to create custom solutions with Windows products as the building blocks and Object Basic as the glue.

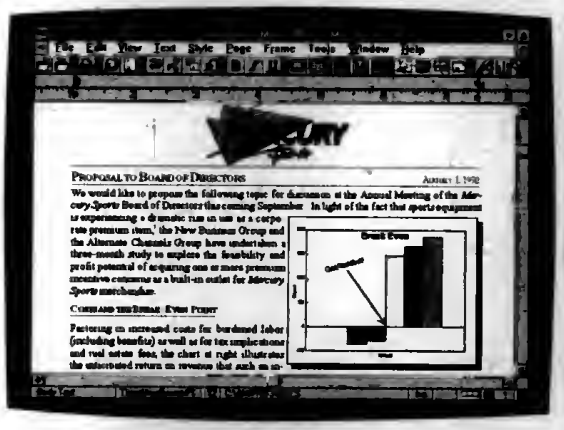
I'm not saying every in-house developer needs Visual Basic. But I am suggesting it deserves serious consideration for corporate development projects. Letting programmers ignore Visual Basic because of the Quiche Factor is a half-baked idea.

Berst is the publisher of Redmond, Wash.-based "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.

Compared to Lo
Microsoft Office look



1-2-3 for Windows Release 1.1 now includes over 25 new features and usability enhancements.

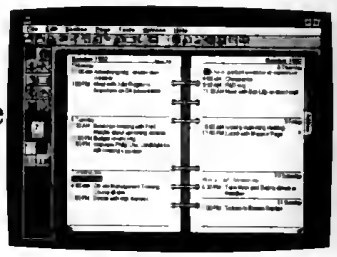


Ami Pro 3.0 includes new features that make it more powerful and easier to use than Microsoft Word for Windows.

It's true. When you evaluate our complete solution for Windows™ desktops and then look at theirs, you'll see why ours is a better business choice.

Of course, both SmartSuite® and Microsoft® Office include full-featured products. But SmartSuite has been recently updated to include 1-2-3® for Windows Release 1.1 with SmartPak™ and the newly released Ami Pro® 3.0, as well as Freelance Graphics® and cc:Mail.™

All four of these award-winning products share a common interface as well as our innovative SmartIcons.™ So when you've learned one, you've learned them all.



For a limited time, SmartSuite includes Lotus Organizer, the computerized way to keep tabs on all your daily tasks.

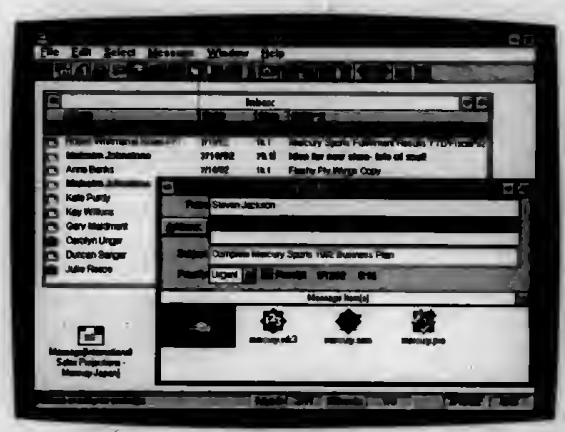
What's more, SmartSuite delivers some truly unique integration capabilities that aren't possible with Office. All four SmartSuite products, for example, share data, text and graphs between each application smoothly and seamlessly. So when an outline produced in Ami Pro is imported to Freelance Graphics, it's automatically converted into a Freelance Graphics outline and full-slide presentation. And a 1-2-3 graph exported to Freelance Graphics will arrive, fully editable. Not so with Excel and PowerPoint.® You can even move

*Offer expires 12/31/92 or while supplies last. **Suggested retail value. ***In Canada, call **1-800-GO-LOTUS**. When you purchase 10 SmartSuite packages, you'll get a free cc:Mail for Windows Platform Pack (a $495 value).
SmartMasters and Working Together are trademarks of Lotus Development Corporation. cc:Mail is a trademark of cc:Mail, Incorporated, a wholly-

tus SmartSuite, s more like a cubicle.



Award-winning Freelance Graphics is the easiest, fastest way to create a stunning presentation.



cc:Mail, the world's leading LAN-based e-mail system, allows you to send documents across all major networks and computing platforms.

quickly between SmartSuite applications just by clicking the icon of the application you want to open.

Better still, all SmartSuite applications are mail-enabled. So you can use cc:Mail to send "live" documents from within each application. Office, on the other hand, requires you to install and use an optional macro with Microsoft Mail 3.0.

Why is now the best time to buy Lotus SmartSuite instead of Microsoft Office?

For one thing, you just can't beat the total value. In fact, for a limited time,* **when you buy SmartSuite, we'll give you Lotus Organizer™ (a $149 value**) absolutely free.** It includes an on-screen calendar, to-do list, planner, address book, notepad and anniversary reminder that are all fully integrated. Plus if you're upgrading from any version of 1-2-3, Symphony,* any Lotus word processor or graphics product, or cc:Mail, you'll save even more. So do the smart thing. Visit your Lotus Authorized Reseller or call **1-800-872-3387, ext. 7165*** for a free demo disk.

Lotus **SmartSuite for Windows**

1-2-3, Ami Pro, Freelance Graphics, and cc:Mail

To find out more about Lotus and Working Together™ in Windows, visit Booth #2842 at Comdex.

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Gateway's Nomads: Powerful, well-keyed

Technology Analysis — A roundup of expert opinions about new products. Summaries written by new products writer Lisa Davidson.

The Gateway 2000, Inc. Nomad series has three monochrome notebooks: an entry-level system based on Advanced Micro Devices, Inc.'s 25-MHz AM386SXL chip and higher end models based on Intel Corp.'s 20-MHz I486SX and 25-MHz I486DX processors. Reviewers raved about Nomad's power supply but were not too keen on its construction.

Performance: The machines cranked out high scores through processing and memory tests. However, all three lagged behind the competition in video performance.

Ease of use: Ergonomically correct, the Nomad keys were described by reviewers as both crisp and pleasingly responsive.

Power supply: The 425DXL model lasted just over four hours; other models lasted about three hours.

Design: Reviewers said one minor drawback was Nomad's flimsy case contruction. Under normal use, its plastic doors and ports bent easily.

Service and support: Toll-free technical support and ooe-year parts-and-labor warranty are offered.

Overall value: Prices start at $2,095 for the 325SXL model with an 80M-byte hard drive.

Gateway 2000 Nomad

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
PC Magazine 8/92	Quality performance	Disappointing keyboard	Excellent battery life	Flimsy construction	Toll-free support	Highly competitive price
PC Computing 9/92	Cranked through processing tests	Large, high-contrast screen	Impressive	5.8 pounds	Outstanding support	Outstanding
PC Week 5/18/92	Excellent performance	Keyboard layout suffers	2.5 hours	Sleek	NC	Surprisingly low price
PC Sources 9/92	Enough power for any task	Great typing feel, fine video	Up to 6 hours	Manufactured by Texas Instruments	Typical support policies	Uncompromising power
Users						
Bruce Chanin, The Goodyear Tire and Rubber Co.	■	▙	■	▙	■	Very good value
Bill Cecil, St. Luke's Hospital of Kansas City	■	■	■	▙	■	Tremendous value
Analysts						
Chris Vasko, BIS Strategic Decisions	■	▙	▙	▮	▮	Has a lot of power
Margaret Jacobs, Datapro Information Services Group	■	▙	▙	■	■	Many extra features
Mark Hansen, Bostek, Inc.	▙	▙	▪	■	■	Next generation most usable

Key: ■ Very good ▙ Good ▮ Fair ▪ Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Gateway 2000 reported revenue of $249 million for the quarter ended June 30, a 5% increase over the previous quarter. "They aren't growing as fast as they have been, but they're doing well," said Bruce Stephens, an analyst at International Data Corp. "Let's say they've reached a cruising altitude."

Gateway responds

Mike Schmitt, marketing manager:

Ease of use: We have actually found that having the shorter key travel allows some users to type faster. The lack of dedicated Ctrl keys is actually a blessing in disguise. By having to hit two keys, we avoid hitting the Pg Dn key instead of the Enter key.

Design: This product stands up very well. We are currently looking at a redesign on the port doors.

Compaq's LTE Lite/25 works fast, long

Compaq LTE Lite/25

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
PC Magazine 8/92	Among the fastest	Sharp, crisp edge-lit screen	2 hours, 17 minutes	Up to 16M bytes of memory	Toll-free support added	Compaq quality, Compaq price
InfoWorld 4/20/92	Excellent	Very good keyboard	Excellent; more than 4 hours	Well-designed	Good	Fine expandability
PC Computing 5/92	Soared through video tests	16 levels of gray in VGA	Revamped power management	NC	NC	Great news
Users						
Robert Brock, Rails Inn	■	▙	▙	■	■	Extremely good value
Glen Williams, Dunn Construction	▙	■	■	■	■	Works great
Dennis Theriault, United Technologies Corp.	■	■	■	■	NC	Very, very versatile
Analysts						
Chris Vasko, BIS Strategic Decisions	▙	■	▙	■	▙	It gets better and better
Margaret Jacobs, Datapro Information Services Group	■	■	■	■	▙	Very good power management
Mark Hansen, Bostek, Inc.	■	■	▙	▙	▙	Could improve disk storage and pricing

Key: ■ Very good ▙ Good ▮ Fair ▪ Poor. Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Compaq reported record revenue of $1.1 billion and profits of $49 million for the quarter ended Sept. 30. Revenue was up 50% over the comparable 1991 quarter when the company recorded a $70 million loss.

Compaq responds

Andrew Watson, director of portables marketing:

Performance: Compaq has not compromised battery life. We have included extremely powerful conservatioo features that are disabled during the reviewers tests.

Ease of use: We focused our attention on making alphanumeric features compatible to the full-size keyboard on the desktop.

Compaq Computer Corp.'s LTE Lite/25 surpasses its competition in performance. Until recently, it was priced on the high end; however, Compaq's recent price cuts of more than $1,000 now make the LTE an attractive buy.

Performance: Based on Intel Corp.'s 25-MHz 80386SL chip, the LTE Lite/25 boasts enhanced processing speed — it is 19% faster than its 20-MHz Intel 386SX-based sibling.

Ease of use: Reviewers noted the notebook's undersized function keys. However, the keyboard possesses a short stroke and has the added benefit of an inverted T cursor key layout, which was not the case in some earlier Compaq notebooks.

Power supply: The nickel hydride battery lasted 2 hours, 17 minutes in battery rundown tests. That score increased to 3 hours, 26 minutes when power conservation was enabled. However, *PC Magazine* noted that battery performance has been compromised for a lower weight.

Design: The 6-pound LTE Lite/25's dimensions are 8½ - by 11 - by 1¾ - in.

Service and support: On-site service and support are provided for one year. Service policies include a one-year warranty and toll-free support from 7 a.m. to 7 p.m. Central time.

Overall value: LTE Lite prices start at $2,799. Users will have to decide whether it is worth its weight.

Why combine a number of SPARCstations,



when a network of HP workstations and X stations operates for less?



It just stands to reason. The more engines, the more cost. Not only in initial purchase price, but system administration, backups and OS updates. That's why more and more people are getting on board with an HP workstation/X station network. A powerful engine that carries plenty of passengers.

At Hewlett-Packard, we understand that not every situation requires a workstation. A network of our Series 700 workstations and 700/RX X stations can give users full PA-RISC workstation functionality and HP's industry-leading speed at a fraction of the cost of a Sun SPARCstation network. And as your operation grows, workstations can be upgraded and X stations easily added.

Whether you're in customer service, manufacturing, finance, engineering, or the hospitality industry, you'll enjoy the benefits of central system administration, low cost of ownership, and access to network-wide resources. And your HP solution isn't just a good investment to start with—it remains one for the long haul.



No wonder HP is recognized as the world-wide leading supplier of color X stations, and is delivering workstations with the highest performance.

To get on board, call 1-800-637-7740, Ext. 7098. In Canada, call 1-800-387-3867, Dept. 2308.

HEWLETT PACKARD

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THE COMPAQ PROSIGNIA PC S
THE SAME IMPACT AS OUR R

Not long ago, we introduced PCs that established us as the new leader in affordable computing. To that we now add the COMPAQ ProSignia Family of PC Servers: delivering a new level of performance, affordability and support by establishing a new class of PC servers.

Ironically, the more critical your PC network becomes, the more likely your network server will prove inadequate.

The faster you need something, the slower it delivers. When it's time to upgrade or expand, you find yourself at the technological equivalent of a dead-end street.

Which, needless to say, can be a problem.

What you need is an easy-to-manage system offering high performance, flexibility and extended support. All at an exceptional price.

In other words, a breakthrough.

In still other words, the new COMPAQ ProSignia.

PROCESSORS: *chip upgradable 486/33 or 486DX2/66* **EXPANSION:** *7 32-Bit EISA bus master slots* **STORAGE:** *over 6GB internal in 8 bays* **HARD DRIVES:** *Fast-SCSI-2 (330MB, 550MB, 1.05GB), Drive Array Pairs (680MB, 1.02GB), IDE (210MB, 340MB, 510MB)* **DRIVE CONTROLLER:** *Integrated or optional 32-Bit Fast-SCSI-2, IDA-2, or Integrated IDE (on models 1/EL and 340/W)* **NETWORK CONTROLLER:** *Preinstalled 32-Bit NetFlex Controller* **SERVER MANAGEMENT:** *INSIGHT Server Management Framework* **RAM:** *4-128MB of industry-standard SIMMS* **WARRANTY:** *Free three-year, parts and labor, on-site** warranty* **SUPPORT:** *Free 24-hour, 7-day hardware support, optional multi-vendor network operating system support.*

For starters, the COMPAQ ProSignia 486/33 outperforms comparably configured IBM and Dell servers by 83% and 64%, respectively.* (Both of which, by the way, are much more expensive.)

In not-so-simple terms, here's how we did it:

COMPAQ ProSignia disk-configured models come standard with an all-new 32-Bit Fast-SCSI-2 Controller that performs twice as fast as old SCSI technology. As well as a preinstalled, COMPAQ 32-Bit NetFlex Controller that works with Ethernet or Token Ring. And for those who require truly

©1992 Compaq Computer Corporation. All Rights Reserved. COMPAQ Registered U.S. Patent and Trademark Office. ProSignia, NetFlex, and CompaqCare are trademarks of Compaq Computer Corporation. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies. *Results from running PC Week File Server Shootout test. All products with 16 MB of RAM. COMPAQ ProSignia with integrated 32-Bit Fast SCSI-2 Controller and four 550MB Fast SCSI-2 Hard Drives. Dell PowerLine 466SE with Dell SCSI Controller and four 650MB SCSI Hard Drives. IBM PS/2 XP466 / 50 Model 95 with IBM SCSI Controller and four 400MB SCSI Hard Drives. **This service, provided

ERVER. WE EXPECT IT TO HAVE ECENTLY INTRODUCED PCs.

extraordinary capabilities, we offer an optional 32-Bit IDA-2 Controller.

All of which means it takes a lot less time to get a lot more done. No more waiting for files. No more staring blankly at a computer screen that stares just as blankly back.

The COMPAQ ProSignia is also the first affordable PC server incorporating advanced management technologies. Included is a set of simple-to-use features that not only help you maintain better control over your entire network, but can also anticipate, and help prevent, potential problems.

The simple translation: Fewer headaches. For you. For users. Forever.

We've even turned up the volume on our service and support program. You get a full three-year, on-site** limited warranty, as well as 24-hour-a-day, 7-day-a-week technical support. Free.

CompaqCare also now includes our optional Advanced Network Support Agreement, a comprehensive selection of systems-related support services that can be customized to meet your needs.

To learn how easy it is to get up and running, just call 1-800-345-1518 in the U.S., or 1-800-263-5868 in Canada.

You'll find out why the COMPAQ ProSignia represents such an exceptional value. And why it will undoubtedly make a big impression. On the marketplace, and on you.



The COMPAQ ProSignia starts at under $2,700† and is designed, tested and certified to run NetWare flawlessly. We even offer NetWare from Compaq to optimize server management capabilities.

intel inside

With only industry-standard technologies and an easy-to-upgrade processor path, the COMPAQ ProSignia provides a cost-effective way to meet today's needs today. And tomorrow's tomorrow.

COMPAQ

by Contracted Service Providers, is specific to hardware products and may not be available in certain geographic locations. Consult the Compaq Customer Support Center for details. †Suggested retail price; reseller price may vary; price indicated is for non-disk-configured COMPAQ ProSignia 486/33 Model 1/EL, not pictured here; monitor, NetFlex Controller not included. Models including hard drive and NetFlex Controller start under $4500. The Intel Inside logo is a registered trademark of Intel Corporation.

BUYERS' SCORECARD

OpenLook scores highest in GUI satisfaction

BY DEREK SLATER
CW STAFF

Hearing all the talk of Microsoft Corp.'s Windows New Technology (NT), desktop system users might get the impression that powerful graphical user interfaces (GUI) have not yet hit the market and that they must wait until NT is finally delivered next year.

But there are already numerous choices among desktop GUIs that present end users with a visual desktop computing environment. The five market leaders on Intel Corp. and Unix workstation platforms are Intel PC-based IBM's OS/2, Microsoft's Windows and Desqview/386 from Quarterdeck Office Systems and Unix workstation-based Sun Microsystems, Inc.'s OpenLook and the Open Software Foundation's (OSF) Motif.

User ratings of these top GUIs established Sun's OpenLook interface with the highest overall satisfaction with a score of 76.8. The rating placed it ahead of OS/2 and Windows, which were in a virtual tie, scoring 73.5 and 73.1, respectively. The OSF's Motif trailed the pack with an overall score of 72.4. Quarterdeck's Desqview was not included in the overall ratings because of an insufficient response base.

Choosing among these interfaces also necessitates a choice of operating system. The Buyers' Scorecard criteria focus on GUI attributes but include some operating systems functions.

In the Unix arena, OpenLook runs exclusively on Sun workstations, while Motif supports hardware from a number of different vendors. (Motif can also be run on top of DOS and OS/2, although this is less common.)

OpenLook topped Motif in most ratings areas, and it earned higher ratings than either of the Intel PC-based products in categories such as local-area networking capability, performance (where its workstation platform may provide a speed advantage) and documentation.

Motif users gave it higher ratings in the area of compatibility with installed hardware and software; it also rated higher than OpenLook in ease of installation. The $1,000 price tag for Motif includes a tool kit, an application programming interface and a description language/compiler, allowing users to develop their own Motif applications.

Despite the closeness of the Windows and OS/2 overall scores, satisfaction ratings indicate differing strengths for the two products. OS/2 comfortably topped Windows in the area of multitasking; Windows enables DOS users to open several applications simultaneously and cut and paste between them, but it does not allow the user to simultaneously perform two computing tasks (a functionality promised for Windows NT).

OS/2 also earned higher ratings in service and support and in memory and file management. Both products are known for being fairly resource-intensive; OS/2 placed higher in performance. Windows, on the other hand, placed higher in ease of use and installation and in value for the dollar.

Buyers' Scorecard records users' satisfaction with their installed products. Users assigned 1-to-10 ratings based on their satisfaction with their GUIs in 12 specific categories. Users also rated the importance of each category. (See the methodology on the following page for a complete description of the scoring process.) •

Graphical user interfaces

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 50 users for each product.

Total possible score **100** Mean score **74**

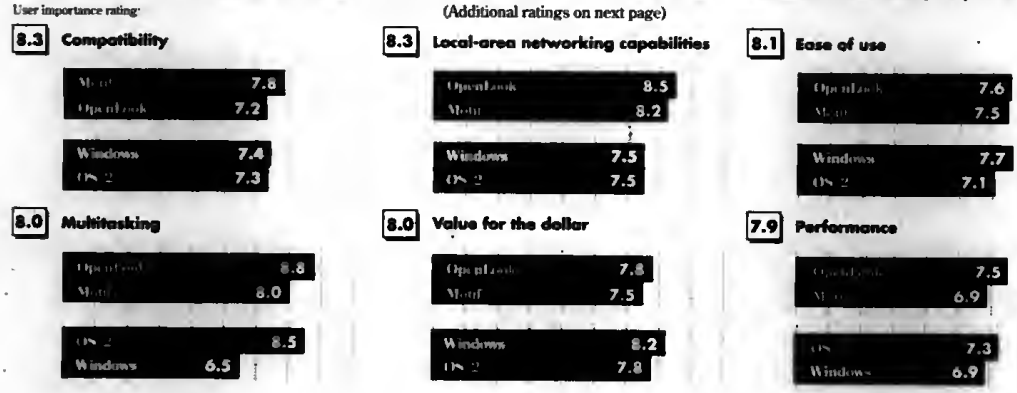
Product	Highest ratings	Lowest ratings
Unix-based GUIs		
Sun's OpenLook SCORE 76.8	Multitasking Local-area networking Value for the dollar	Ease of installation Memory management File management
OSF's Motif SCORE 72.4	Local-area networking Multitasking Ease of use	File management Memory management Utilities
Intel PC-based GUIs		
IBM's OS/2 SCORE 73.5	Multitasking Value for the dollar Vendor service and support	Ease of installation Documentation Utilities
Microsoft's Windows SCORE 73.1	Value for the dollar Ease of installation Ease of use	Multitasking File management Memory management

RATINGS IN ORDER OF IMPORTANCE

In the Unix comparison, Motif earns the highest score in compatibility, the area users rated as most crucial. However, OpenLook gets higher marks than Motif in the remaining key ratings categories. Windows tops OS/2 in most areas on Intel platforms but fares poorly in multitasking.

User importance rating

(Additional ratings on next page)

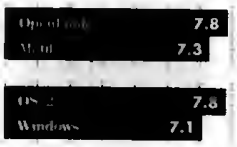


RATINGS IN ORDER OF IMPORTANCE

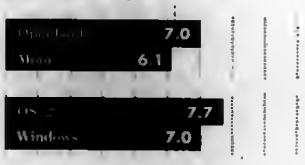
(Graphical user interfaces, continued from previous page)

OpenLook again passes Motif in most categories, with the exception of ease of installation. On the PC platform, OS/2 and Windows divide top honors in the remaining six areas.

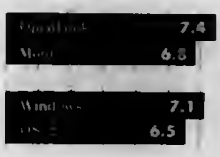
7.8 Vendor service and support



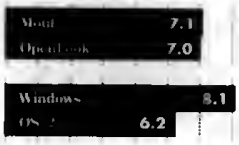
7.6 Memory management



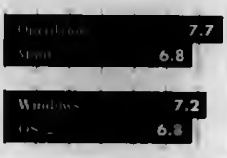
7.3 Documentation



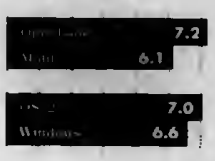
6.8 Ease of installation



6.8 Utilities



6.7 File management



Loyalties

Would you buy the product again?
(Reasons are based on the most frequently stated responses.)

OpenLook
Responses: 50



Number of respondents

Likely
The reason: Runs our applications

Unlikely
The reason: Difficult for new users

Motif
Responses: 50

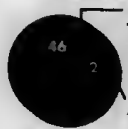


Number of respondents

Likely
The reason: Industry standard

Unlikely
The reason: Need to evaluate others

OS/2
Responses: 48

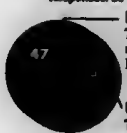


Number of respondents

Likely
The reason: It is powerful

Unlikely
The reason: Better tools on Windows

Windows
Responses: 50



Number of respondents

Likely
The reason: Ease of use

Unlikely
The reason: No need for GUI

Verbatim

What do you like best/least about this product?
(Responses are based on the most frequently stated answers. Quotes are selected from users' responses.)

OpenLook

Likes
Ease of use
"It's very customizable and is visually appealing."

Dislikes
Poor performance
"The performance is weak — it's not too good as far as resource usage goes."

Motif

Likes
Ease of use
"Having the common, graphical interface gives us more productivity."

Dislikes
Poor performance
"It's relatively slower and uses a lot more bandwidth than a command-line interface."

OS/2

Likes
Multitasking
"It has true multitasking — the operating system stays up when an application crashes."

Dislikes
Resource consumption
"It needs a lot of memory and a huge hard drive."

Windows

Likes
Ease of use
"It helps get our users over technophobia."

Dislikes
Poor performance
"Performance is slow due to the overhead of Windows."

Vital statistics

Total number of respondents: 200

What is your position?

CIO/VP/IS director	11
IS manager	28
Network/LAN administrator	15
Operations	13
Systems analyst	42
Other	91

What is your responsibility for GUIs?
(Multiple responses allowed)

Evaluate or recommend vendors	171
Determine need	145
Select vendors	131
Set standards for organization	123

How many PCs/workstations at your location use GUIs?

More than 500	9
101-500	21
51-100	19
50 or less	151

Desqview/386 results

With a response base of 18 users, Quarterdeck Office Systems' Desqview earned the following scores in these key categories:

Compatibility	7.6
Local-area networking capabilities	7.5
Ease of use	7.5
Multitasking	8.2
Value for the dollar	8.2
Performance	7.4

In verbatim responses, users lauded Desqview for low overhead and good memory management capabilities. On the downside, they mentioned some compatibility problems with new applications.

METHODOLOGY

Products included in this Buyers' Scorecard are the market share leaders among graphical user interfaces (GUI) for desktop computing, including both workstations and PCs.

The response base was 50 users each for IBM's OS/2, Microsoft Corp.'s Windows, Sun Microsystems, Inc.'s OpenLook and the Open Software Foundation's Motif as well as 18 users for Quarterdeck Office Systems' Desqview.

Desqview was not included in the overall score because the number of respondents rating the product was below the required minimum of 30 respondents. Respondents reported using the following platforms to run their GUIs:

- Intel Corp. 80386 PCs (34%).
- 1486 PCs (24%).
- Workstations running Sun Microsystems, Inc.'s Solaris (13%).
- Workstations running Unix variants from other major vendors (13%).
- Other (16%).

User names were obtained from nonvendor sources. First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results.

The survey was conducted by telephone over a two-week period last month.

Users rated their satisfaction with their installed products and were not asked to compare or rate one product directly against another in the Scorecard.

To compute the overall score for each product, we performed the following steps:

1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score.

2) Repeat the process for all remaining categories.

3) Average the resulting figures for the average weighted score.

4) Convert the average weighted score to base 100; the ratio of the average weighted score to the average user importance rating is equal to the ratio of the overall score to 10. Numbers were rounded off where necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following for their assistance in preparing the Buyers' Scorecard: Lew Brentano, Computer Intelligence/Infocorp; CW Database Division; Forrester Research, Inc.; International Data Corp.; and Earl Rich, Faulkner Technical Reports.

E-Mail For Both Mainframe And LAN Is A Huge Headache...



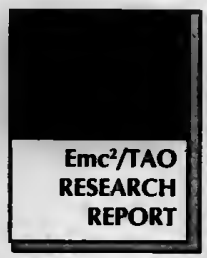
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Utility looks to STAR to find answers

Distributed trouble-analysis system links service and field crews to help speed crisis response time

BY MARYFRAN JOHNSON
CW STAFF

SAN FRANCISCO — When an earthquake or some other disaster knocks out electricity in Northern or Central California, the same fate often befalls the communication between Pacific Gas & Electric Co.'s (PG&E) corporate mainframes and its regional divisions.

So at a time when customers and the press are clamoring for information — "When will the lights go back on? What areas are out of service? How many people are affected?" — the regional divisions of the nation's largest gas and electric utility find themselves unable to come up with those answers.

Enter the STAR project.

The System Trouble Analysis and Restoration (STAR) project seeks to untether the computing needs of the 25 regional distribution offices from the corporate mainframe via a distributed network of PCs and Unix servers.

Now under development on a half-dozen Sun Microsystems, Inc. workstations, STAR will be an integrated set of five applications linking customer service, dispatchers, field crews, system operators and construction personnel. The applications, developed in C to ensure portability, will reside on Sun database servers in the division offices and will run under X Window System emulation on desktop PCs or on Sun workstations on a local-area network.



Dave Hawkins *hopes STAR will improve service*

The pilot project, partly installed now in the Santa Cruz, Calif., division, will be evaluated in June for a possible rollout to the other two dozen divisions, said Dave Hawkins, manager of distribution computer applications.

"The key thing is that each division group needs to know what the others are doing," he said. "Our current outage information application is on the mainframe, and when those links are broken, it can't be used. With a distributed system, the applications can be self-contained within each division."

Today, there is no reliable, convenient way for the customer service representatives and electric operations groups to share information about outage identification, repair and restoration, he said. Even in nonemergencies, better coordination between field and office workers should boost customer service, be added.

Trial period

"The goal is to have all the STAR software delivered by the end of this year, with pilot testing next year," Hawkins said. "We need to run the pilot for three to six months before we're really confident it will produce all the results that we want."

In PG&E's Santa Cruz division — covering several cities with more than 100,000 customers — STAR will start out by providing crew monitoring information to customer service representatives. When outages occur, customers who call the company will talk to someone with fresh, detailed information.

"The customer service rep essentially will be able to tell the customer that the outage problem has been identified, that the crew is estimating another two or three hours to fix it and so forth," Hawkins said.

Eventually, PG&E plans to put mobile data terminals in its trucks so crews on the scene of an outage can enter information into the system from the field. Currently, they use telephones or radios to contact a dispatcher.

With more than 20,000 PCs in use on the corporate network, PG&E's investment in training and office applications is too vast to consider replacing the PCs with Unix-based workstations, Hawkins noted.

"Ultimately, the STAR applications have to run on Intel-based machines," he said. "Obviously, we will need a multitasking operating system for it, but we're still debating whether that will be [SunSoft, Inc.'s] Solaris or [Microsoft Corp.'s] NT."

Nice niche

Unix workstations have carved themselves a comfortable niche at PG&E, with 70 to 80 workstations used across the company in a variety of engineering and development projects. About 45 Sun Unix servers are connected to LANs, acting as database servers for the individual divisions.

STAR's functions will include managing customer calls, scheduling service calls, monitoring crews, identifying locations of power failures, calculating repair costs, generating storm reports and producing graphics of circuit configurations.

Among the other benefits of STAR, Hawkins said, are the near-elimination of "lost" customer complaints, automated outage reporting and provision of accurate, up-to-date information to system operators about fault locations. Productivity is expected to increase for the so-called T-Men (T for Trouble) because of reduced travel time, instant access to equipment locations and less paperwork overall.

"One of the advantages you get is knowing as you go along what the real cost of fixing the problem is," Hawkins said. "The work will be estimated as it goes along."

ON SITE

Pacific Gas & Electric
San Francisco

- **Challenge:** To share information during electrical emergencies between various groups involved in outage repair and restoration, thus improving customer satisfaction. Links to the current mainframe-based system frequently collapse during disasters such as earthquakes.
- **Technology:** The System Trouble Analysis and Restoration pilot project is being developed on Sun Unix workstations for eventual deployment (pending June 1993 evaluation) on Intel-based PCs and Unix servers.

SFT III NetWare debuts — finally

ANALYSIS

BY MICHELE DOSTERT
CW STAFF

It has taken a long time, but local-area network managers worried about running mission-critical applications on fallible PC servers can relax a little: System Fault Tolerant III (SFT III) NetWare, in the works for more than five years, has finally arrived.

Last month, Provo, Utah-based Novell, Inc. announced a limited-availability release of its SFT III NetWare v3.11 LAN operating system. "We are only releasing it to customers that we know have the expertise to properly install and maintain SFT III," said Jan Newman, executive vice president of the NetWare Systems Group. "Although SFT III NetWare is simple to install, it's a complex product, and we want to make sure it's used correctly before we put it in wide release."

Beta-test users and early adopters of SFT III NetWare said they are pleased with the product. "It lets me sleep a lot better at night," said Ed Wilk, network manager at WHDH television in Boston. "My only criticism is that it shouldn't have taken anywhere near this long tn come out."

While there may not be many mission-critical applications currently running on NetWare LANs, analysts said they see SFT III NetWare as an important product in Novell's quest to establish itself as the platform of choice in large information systems groups. "There are a few people who have been desperately waiting for SFT III and will grab it as soon as they can get it," said Bob Gill, a vice president at Gartner Group, Inc., a market research firm in Stamford, Conn. "But I think SFT's real impact will come as downsizing picks up steam. Within the next 18 months, probably all of the Fortune 500 will have a copy of SFT III running somewhere in their organizations."

Backup role

SFT III NetWare works by "mirroring" two servers in software. Whatever runs nn one server also runs on the other. If the primary server goes down, the backup server automatically and instantaneously takes over. Users should be unaware of the mirrored server, both when it is running in the background and when it takes over for the primary server, the company said.

In order for the two servers to remain in the same state, communication between the two must be almost instantaneous.

To accomplish this, network interface card vendors such as Thomas Conrad Corp. in Austin, Texas, and Eagle Technology in San Jose, Calif., are marketing special "server-to-server" cards and drivers that provide server-to-server throughput of 100M to 1.2G bit/sec. over coaxial, shielded twisted-pair or fiber-optic cable.

SFT III NetWare was designed to protect users from server failures caused by hardware. "The two most common server failures are either in the hard disk or in system memory; SFT III NetWare protects against both," said James Shipp, an MIS engineer and SFT III user at WordPerfect Corp. in Orem, Utah. "Also, if you physically separate the servers, [which usually requires a fiber-optic link], it provides you with disaster protection; if a building floods or burns down or whatever, a mirrored server at a different site will automatically take over."

Can do and can't

Novell SFT III NetWare CAN protect against:

- Server memory failures.
- Server hard disk failures.
- Disaster/Destruction, if mirrored server is physically distant from primary server.

Novell SFT III NetWare CANNOT protect against:

- Server failures caused by system software.
- Server failures caused by applications (NLMs).

Not fail-safe

SFT III cannot protect users against system or application errors in software. "If you have a driver or whatever that's chewing up memory and corrupting data on one server, that will also happen on the mirrored server," Shipp said.

Using SFT III degrades LAN performance slightly. "The algorithms required to mirror the server obviously create some additional server overhead, but I don't think the performance drop was noticeable to the users," said Gregg Scott, network manager at Oregon State University in Corvallis, Ore. "For people running mission-critical applications, the gain in reliability would be well worth the cost in performance."

Users are also enthusiastic about using SFT III to simplify

Continued on page 52

SFT III NetWare

CONTINUED FROM PAGE 51

the managing and upgrading of their servers. "With a 24-hour newsroom on NetWare servers, it's hard to schedule downtime," Wilk said. "SFT III lets me switch to the backup server, do whatever I need to on the primary server, then switch back to do maintenance on the backup server, and my users never notice."

Some users were enthusiastic about the product but are unable to adopt it because of their server configuration.

"We use high-end servers, $100,000 PowerFrames from Tricord Systems, Inc.," said Jim Queen, LAN manager at Enron Gas Services Corp., a natural gas company in Houston. "We can't afford the space or the money to buy another one," he added. "We're pressing Tricord and Novell to come up with a superserver version of SFT that would let us run mirrored systems in a single box."

The first general SFT III release will be SFT III Version 4.0, which will follow Novell's high-end NetWare 4.0 when it is released in the first quarter of 1993.

Product may ease mechanical design

BY MARYFRAN JOHNSON
CW STAFF

A marriage of convenience in the world of mechanical design has produced a new breed of hardware and software systems for the design and use of real-time control and embedded systems.

Natick, Mass.-based MathWorks, Inc. joined forces last week with Dspace GmbH in Paderborn, Germany, to give users a no-code-writing, plug-and-play approach to real-time design.

"What they're doing takes the risk and uncertainty out of mechanical design, which is very attractive to businesses like car manufacturers," said Kathey Hale, a senior analyst at Dataquest, Inc. in San Jose, Calif. By bridging the MathWorks software and Dspace digital signal processing hardware, Hale added, the companies could carve out a profitable niche in the $2 billion mechanical design market.

The integrated product includes MathWorks' Matlab numerical software package, its Simulink and Simulink C Code Generator and Accelerator, plus the Dspace hardware. It will be available by the end of the year, priced at $30,000 on a Sun Microsystems, Inc. SPARCstation.

Dspace hardware includes plug-in boards for PCs, expansion boxes with bus interfaces and Ethernet-compatible expansion boxes for lab or vehicle use.

MathWorks' new Simulink C Code Generator automatically produces C code for continuous, discrete-time and hybrid systems modeled as Simulink block diagrams. Users will be able to interface the code directly to hardware for real-time testing.

Previously, engineers had to write C code manually, a time-consuming and usually bug-generating process. The direct linking of code into real-time testing environments was either too expensive or too difficult to attempt.

One beta-test user is Arvin/Calspan Corp. in Buffalo, N.Y., which operates experimental aircraft for in-flight simulations of aircraft design.

"We've always been Matlab and Simulink users for our design process. Now we can design flight control systems in Simulink and use the code-generation product to generate code to run on the Dspace hardware," said Paul Deppe, a senior pilot and electrical engineer.

DEC introduces intelligent POS terminal

BY ELLIS BOOKER
CW STAFF

After six years of selling customized retailing systems, Digital Equipment Corp. introduced its first open architecture, intelligent point-of-sale (POS) terminal recently.

The DECpos is 386SX-based and can run third-party software under DOS, OS/2 and Unix. In its basic configuration, the disk-based DECpos costs $3,500; a diskless version is priced at $3,000.

Explaining why retail customers have gravitated toward general-purpose PC-based POS systems, DEC's retail industry manager for in-store systems, Herb Cline, said, "Prices for PC platforms have dropped from $8,000 to less than $2,000 over the past five years, but dedicated POS prices have held steady."

In addition, Cline said, open systems are easier to mix and match — an important consideration given the firestorm of acquisitions and mergers in the retail industry.

DEC will continue to sell its nonintelligent POS, the DECcashier, as well as in-store processors, a network management product for retailers and integration services.

DEC made its introduction at the Riscon retailing conference in New Orleans. Also showing its wares at Riscon was NCR Corp., which announced a portable purchase-order system based on its NotePad pen-based computers.

Running Portable PO software, the NotePad screen becomes a purchase-order form. As a buyer fills in the blanks on the form, the NotePad changes these handwritten entries into text and shapes. In addition, Portable PO can store customer lists as well as pop-up sketches and photographs of products.

Developed jointly with San Diego-based JDS Solutions, the Portable PO software ranges in price from $1,000 to $2,000, depending on quantity.

Of course,

your applications run on Sun.

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Massive image storage aids publisher

BY ELLIS BOOKER
CW STAFF

ENGLEWOOD, Colo. — Information Handling Services, Inc., the world's largest republisher of industrial documents and catalogs, has been steadily growing its electronic document databases since 1988, when it deployed its first imaging system.

Indicative of this progress, Information Handling Services this summer upgraded the capacity of that imaging system. The new system, which comes from IA Corp. in Alameda, Calif., has a storage capacity of 2T bytes.

"We've got 8 million images in currently, and that can grow, with the hardware we have in place today, to 2T bytes," said Dan Denkin, Information Handling Services' senior manager of microfilm/electronic imaging. Denkin added that the IA system was designed to grow much larger.

Information Handling Services collects, archives and distributes, with indexes, technical reference information from a host of places, including military, federal, industrial, manufacturing and environmental sources. The company then outputs this information in a variety of formats — CD-ROM, microfilm and so on — to its 15,000 customers in 80 countries.

The advantage of imaging, Denkin said, "is pages come in once, we index them and check them for quality and then we can output them in different formats."



Dan Denkin: *8 million images and more*

With the imaging system and its homegrown indexing application, Information Handling Services can also rapidly create customized publications.

The new imaging system replaces the one the company deployed in 1988 from Integrated Automation, a Litton Industries company.

Integrated Automation was renamed IA Corp. in August after it was purchased from Litton by a management team.

The new, $5 million imaging system comprises four servers. Three Sun Microsystems, Inc. servers — two for output and one system controller — are connected on a Fiber Distributed Data Interface (FDDI) 100Mbit/sec. local-area network. Another server is used for input and receives the scanned images prior to having them written to optical disc.

The FDDI LAN features a Network Systems Corp. router that links to a 10M byte/sec. Ethernet LAN containing terminals, PCs, printers and scanners.

On a busy day, Information Handling Services can scan a whopping 35,000 pages into the imaging system. It can output 250,000 images in the same time frame.

Even so, Denkin pointed out that scanning paper documents is a bottleneck. "If we could get documents electronically, it would help," he said, noting that republishers such as his company have for years been able to receive text electronically in ASCII form. The catch, he said, is getting machine-readable raster images from publishers.

Reflecting this publishing reality, in fact, Information Handling Services produces three kinds of electronic products: Full-text publications with no images, text with indexes that point to raster graphics and compound documents, which put the text and graphics on the same page.

Large-scale imaging

Technical reference publisher Information Handling Services combines a Unix-based document imaging system with its own mainframe-based indexing scheme.

The index sits on Amdahl Corp. and Digital Equipment Corp. VAX platforms. It allows workers at PCs and dumb terminals to create custom reference documents.

Indeed, with the Information Handling Services image system, most of the work can be done directly from the index. Workers rarely need to dip into the 8 million images maintained on the company's four optical jukeboxes from Cygnet Systems, Inc. in San Jose, Calif.

IN BRIEF

Mac apps on RS/6000

■ **IBM users interested in running Apple Computer, Inc. Macintosh applications on their RISC System/6000 workstations should be able to do so next year, once San Diego, Calif.-based Xcelerated Systems, Inc. finishes the port of its Liken software to the IBM platform. Liken enables users of Unix workstations with the X Window System environment to run shrink-wrapped Macintosh applications without modification.**

■ **3M Co. announced Magnus 1.2 GB, a 1.2G-byte ¼-in. data cartridge that works with IBM's latest RS/6000 workstation models. The workstations feature 1.2G-byte, ¼-in. tape drives for software loading and fixed-disk backups. The tape is available now for $57.**

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NEW PRODUCTS

LAN hardware

Eagle Technology, Inc. has announced the NetWare Mirror Server Link, a high-speed communications card.

The product was designed for Novell, Inc.'s NetWare System Fault Tolerance (SFT) Level III Servers, and it supports NetWare SFT III server-to-server communications at an actual data rate of 128M bit/sec., the company reported.

The product allows for a second network server to mimic the activity of a primary server. The second server becomes the active server instantaneously and transparently if the primary server goes off-line.

The NetWare SFT III has 32-bit shared-memory architecture that allows 32-bit packets to be transferred between the network interface card and the host CPU at a low latency rate.

Prices start at $1,095.

Eagle Technology
1160 Ridder Park Drive
San Jose, Calif. 95131
(408) 441-7453

FiberNet Research, Inc. has introduced the FR1140 fiber-optic Fiber Distributed Data Interface (FDDI) network interface adapter.

The product was designed for the IBM PC/AT, XT/AT bus. The FR1140 is an ANSI-compliant FDDI card that features on-board 128K-byte random-access memory. Advanced Micro Devices, Inc.'s Supernet 2 chip set, a Single Attachment Station and a 4M byte/sec. data transfer rate onto the XT/AT bus, the company reported.

The adapter costs $995.

FiberNet Research
1 Tara Blvd.
Nashua, N.H. 03062
(603) 891-2600

LAN software

LaserData, Inc. has introduced two LaserView document imaging software products.

According to the company, LaserView Optical Storage for NetWare and LaserView Integrated Printing for NetWare were designed to make it easier for users to implement high-performance imaging applications on Novell, Inc. NetWare networks. LaserView Optical Storage for NetWare is a high-capacity storage that supports write-once read-many 5-in. and 12-in. optical discs. The product is optimized for the NetWare V3.11 network operating system and can handle millions of document images. LaserView Integrated Printing for NetWare is a high-performance print service.

Prices start at $4,495.

LaserData
300 Vesper Park
Tyngsboro, Mass. 01879
(508) 649-4600

Workgroup software applications

Online Computer Systems, Inc. has started shipping the NetWare Loadable Module (NLM) version of its Opti-Net CD-ROM networking software.

The product was designed to allow local-area network users to share information contained on a CD-ROM. Up to 100 users can simultaneously share Small Computer Systems Interface (SCSI) CD-ROM drives on a Novell, Inc. NetWare 386 LAN. The Opti-Net NLM includes integrated features such as SCSI Bus Disconnect and Reconnect and caching and data prefetch. The monitor has a memo-driven management console that enables users to configure, monitor and control the CD-ROM server at the same time that it is serving users.

The product costs $1,495.

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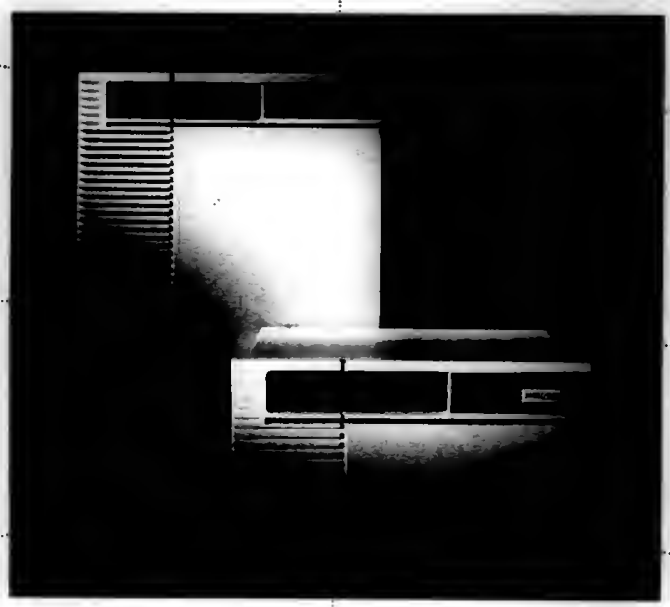
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J. P. Morgan chooses CompuServe for frame relay

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Forging ahead with its year-old telecommunications outsourcing plan, J. P. Morgan & Co. recently signed on with CompuServe, Inc. for frame-relay services that will interconnect its domestic local-area networks.

J. P. Morgan joins about 100 other U.S. companies as a customer of public frame-relay services, according to analysts. The global financial services firm has five sites up on CompuServe's Frame-Net and plans to add eight more by the end of the year, said Thomas Hynd, vice president of network services.

Frame relay is a "fast" form of packet switching made possible by today's more reliable communications links. While frame relay has been the subject of many seminars and trade press articles during the past 18 months, actual user experience to date has been limited as telecommunications managers take time to familiarize themselves with it and evaluate it against other emerging high-speed wide-area services.

Overall price was the main factor in J. P. Morgan's signing a five-year, $3 million frame-relay contract with CompuServe earlier this month, Hynd said.

In fact, "CompuServe's service tends to be the least expensive overall because of the granularity of its committed information rate," said Richard Malone, principal at Vertical Systems, Inc., a consultancy in Dedham, Mass. He explained that CompuServe will allow users to slice their guaranteed bandwidth requirement down to as little as 4K bit/sec., while other vendors, such as AT&T and WilTel, only go as low as 32K and 64K bit/sec., respectively.

CompuServe's scheme addresses "networks in the 10- to 20-node range for a fully interconnected mesh network at the low rate," Malone said.

Third outsourcer

The CompuServe contract brings the firm's network outsource provider tally to three. The company kicked off the outsourcing of its major telecommunications components last February with a $20 million deal with BT North America, Inc. for international terminal-to-host traffic (CW, Feb. 17).

Shortly thereafter, J. P. Morgan signed up with AT&T for an international router-based LAN internetwork with no domestic links other than to its New York headquarters.

Explaining the company's outsourcing strategy, Hynd said, "As we saw our business and needs growing rapidly in terms of capacities and quality, we saw players emerging with public services that could reliably meet our needs."



Thomas Hynd *says price won CompuServe the $3 million pact*

The financial services firm is mixing and matching vendors because it is evaluating each telecommunications function that it wishes to outsource as an independent module with individual criteria, Hynd explained.

He acknowledged, "We considered the finger-pointing issue, which always arises to some degree any time one has diverse technologies and platforms. But so far, we don't see any increase because of the different networks."

Staying with Cisco

CompuServe is meeting the company's key needs such as high-speed LAN-to-LAN connectivity supporting a variety of LAN protocols via Cisco Systems, Inc. multiprotocol routers. Because J. P. Morgan is a Cisco shop, Cisco support was part of its criteria, Hynd said.

This was not because of potential interoperability problems among different vendors' routers but because "we already have expertise with Cisco," Hynd said.

Even when using a public service, he said, "as you're interacting with LANs locally, there's a certain amount of device expertise you need."

BT expands service

Telecom service provider BT announced two new frame-relay customers last week and said it has extended its ExpressLane service to several new international locations. New customer Proteon, Inc., a networking vendor in Westboro, Mass., will retain its year-old WilTel Wilpak domestic frame-relay network while hooking into BT's international service, primarily for LAN-to-LAN electronic-mail traffic, said Richard Weeks, manager of network systems at Proteon.

Weeks explained that moving E-mail "off of slow, unreliable analog lines" and putting it on fast digital lines that provide real-time communications 100% justified the move.

"We're basically paying the same price but getting several orders of magnitude greater service," he said. Proteon will expand to Paris, Frankfurt and Munich, Germany, in 1993, he said.

Meanwhile, Maxtor Corp., a magnetic storage device maker, signed on with BT to link LAN users in the UK, France and Germany to corporate headquarters in San Jose, Calif. The company is primarily helping to decentralize Maxtor's order management systems, said Dan Gentile, a network manager.

BT, which plans to cover 11 countries and 400 cities with frame-relay service by year's end, expanded the service last week to Brussels, Toronto, Frankfurt, Hong Kong, Tokyo, Amsterdam, Singapore, Stockholm and Sydney, Australia.

International service becomes important to LAN-oriented customers expanding globally. For example, BT X.25 customer Pitman-Moore, Inc. in Lake Forest, Ill., currently runs mostly terminal-to-host traffic, but off-the-shelf LAN applications could change that, said Bill Westrick, manager of distributed technology.

"At that point, the international component of frame relay would become important. We first roll out applications to regions globally. From there, they branch out to individual sites."

JOANIE M. WEXLER

Users seek cheapest way to move to TCP/IP, SNA

BY ELISABETH HORWITT
CW STAFF

While many users have already interconnected their Transmission Control Protocol/Internet Protocol (TCP/IP) and IBM Systems Network Architecture (SNA) installations, they are always on the lookout for more cost-effective, functional ways to do it.

"There is a huge installed base of IBM mainframes that need to be accessed by distributed client/server systems, and TCP/IP is becoming the protocol of choice for enabling any sort of PC to access [multivendor] computing resources and peripherals," said Joe Gottlieb, a program director at Westport, Conn.-based research firm Meta Group, Inc.

Business Research Group expects TCP/IP traffic to exceed SNA traffic on the enterprise network in three to four years.

Amoco Production Co., for example, expects to move all of its mainframe applications down to Unix systems by the end of next year, but in the meantime, its Unix users must be able to access mainframe applications and exchange mail with mainframe users, said Jon Tankersley, a research scientist at the Tulsa, Okla., Amoco Corp. division.

Right now, Amoco is trying to find ways to minimize the overhead its mainframes experience running TCP/IP applications, Tankersley said. The company is "not experiencing outrageous overhead at the moment," but it knows from past experience that the right mix of TCP/IP applications can "bring an IBM 3090 to its knees," he said.

Targeting TCP/IP overhead is the LinkMaster 6200 Network Gateway, announced last week by McData Corp. in Broomfield, Colo. While IBM's 3172 is said to offload about 30% of TCP/IP overhead from a mainframe, McData's 6200 offloads 100% of both TCP/IP protocols and applications, McData said.

In addition, the 6200 is the only communications controller besides the 3172 to take advantage of IBM VTAM 3.4's dynamic table update capability, a McData spokesman said.

This is an important feature

Continued on page 64

Integration issues

There are three typical flavors of SNA and TCP/IP integration:

•LAN-to-host gateway:

McData's LinkMaster 6200 Network Gateway supports TCP/IP, DECnet and IBM Open Systems Interconnect. The SNA platform is Unix on an Intel Corp. 1486 with an Extended Industry Standard Architecture bus. LANs supported are Token Ring, FDDI and Ethernet. LinkMaster offloads 100% of the TCP/IP processing from the host and features dynamic reconfiguration of LAN devices.

Availability and pricing: Ships this month, priced at $21,000 to $42,000.

•Simultaneous TCP/IP, SNA sessions on Windows:

IBM's TCP/IP Version 2.1 for DOS supports as protocols Telnet, 3270, Digital Equipment Corp.'s VT 220 and TCP/IP Sockets. It can redirect NetBIOS packets over TCP/IP networks and supports up to 255 sessions.

Availability and pricing: Scheduled to ship Jan. 29 with a base price of $230.

•SNA sessions over TCP/IP:

Network Software Associates' Elite line supports DOS and Windows-based workstations. Protocols supported include IBM 3270, Advanced Peer to Peer Communications and High Level Language Application Programming Interface.

Availability and pricing: Scheduled to ship this month, $395 for the 3270 product; $3,995 for the high-end gateway.



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Banks continue to invest big in telecommunications

BY JOANIE M. WEXLER
CW STAFF

SALISBURY, Md. — Banks with assets of more than $5 billion will collectively invest $330 million in telecommunications products and systems in 1992 — about $600,000 apiece — according to a consulting firm specializing in technology trends in the financial services industry.

Primary areas of investment include expanding and upgrading backbone facilities and network management, according to Mentis Corp., which conducts an annual survey of more than 2,000 banks.

Communications expenses now make up 20% to 25% of banks' total technical operating costs, according to the firm. Financial institutions continue to make telecommunications investments even in a sparse economy "because the sheer size" of their myriad connection points reaps operational savings, said Mary Donadoni, a research associate at Mentis.

She said banks are the biggest vertical buyer of telecommunications services, second to health care organizations.

The study revealed that leased lines continue to account for the largest chunk of the telecommunications budget — about 25% (see chart). However, in three to five years, "there will be a significant redistribution of dollars to public networking vs. private," Donadoni predicted. The rate of the shift depends on how quickly new technologies roll out, she said.

Bruce Redington, director of communications at the Federal Reserve Bank of Atlanta, said that while leased lines currently account for 20% to 25% of his telecommunications budget, "dial-up networking is growing much faster than leased lines."

He noted that his organization still runs — and will likely continue to run — its steadily flowing transaction-oriented traffic across dedicated lines.

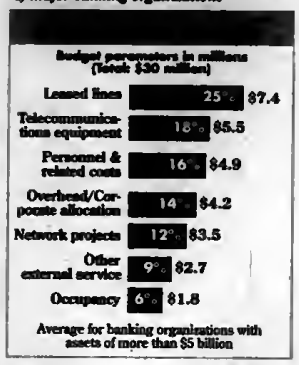
"But there are things we'll be offering in the future that lend themselves to high-speed dial-up, such as large files that don't flow all day long but are time-critical," he said. "Frame relay has potential here."

Redington said he anticipates that his organization's T1 network will remain in place. The redistribution of budget funds from private to public networking will be largely accounted for by new, public network segments as opposed to replacements of dedicated lines, he said.

However, the decision will be based on cost numbers, which are currently hazy for many fledgling telecommunications technologies, Redington noted. "There is a threshold of users that the leased line fits best, and I don't see that changing in this industry at least until the latter part of the decade," he said.

Carrying costs

The biggest single networking expense is that of leased lines, according to a survey of major banking organizations



Source: Mentis Corp. CW Chart: Michael Siggins

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IN BRIEF

EDI a must for Medicaid bills

■ **The U.S. Health Care Financing Administration** has warned state **Medicaid** agencies and doctors that they must implement electronic data interchange systems for billing transactions by 1995 if they expect to get federal funds. Driving toward paperless claims processing, the agency described its plans to develop a uniform billing format with standard data elements and an ANSI X12 transaction standard.

■ **Data General Corp.** announced that it is the first vendor to implement IBM's Common Program Interface for Communications (CPIC) protocol on an "open" platform: DG's Unix-based Aviion. CPIC is a programming interface that aims at making applications interoperable and portable across a variety of networking protocols, including IBM's Systems Network Architecture, Transmission Control Protocol/Internet Protocol and Open Systems Interconnect.

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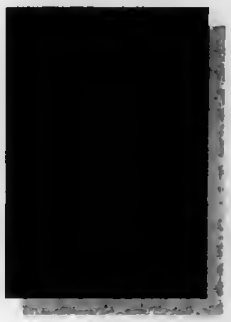
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Management solutions needed

Lack of net integration tools stymies some, but not all, downsizing plans

BY LYNDA RADOSEVICH
CW STAFF

The tide of companies that are downsizing critical applications from mainframes to PC local-area networks is being stemmed by a shortage of enterprise network management solutions, according to a recent report.

"The top issue is a lack of integration between management packages of all types," said Tom Wood, a senior industry analyst at the Business Research Group (BRG) in Newton, Mass., and author of the report. "Users want to put what used to be on the mainframe onto the LAN. The problem is that the LANs and internetworks aren't well-managed, and the management pieces are not well-integrated."

Despite this lack of products, 80% of users do plan to implement integrated network management during the next 24 months, according to the BRG survey. BRG surveyed 400 enterprise and systems managers in organizations of 1,000 or more employees.

The users will insist that new network and systems management packages work with networks and network management systems that they already have in place — many of which are based on Transmission Control Protocol/Internet Protocol and IPX transport standards — the report said.

Among the benefits users expect from network management systems is the ability to monitor entire systems from one console. Other benefits include greater reliability, less downtime, improved communication, total view of the network, higher performance and lower personnel costs.

Although managers want standards-based integrated systems management, they do not want to wait while vendors hash out their differences, the report said.

"Standards are the only thing that will make a more comprehensive environment possible," said Bill Lawrence, a network engineer at the San Onofre, Calif., branch of the Southern California Edison Co. "But that can take a long time and be so all-encompassing that no one can use them. True standards will evolve and be ratified by the fact that people use them."

Two such protocols already nsed in network management software — IBM's NetView and Simple Management Protocol (SMP), the successor to Simple Network Management Protocol — are emerging as make-due standards, according to users contacted.

"The only way we could have made our system work is by insisting on SMP standards from the vendors," said John Scoggin, supervisor of network operations at Delmarva Power & Light Co. in Wilmington, Del.

Some of the blame for the troubles integrating network management systems lies in the user community.

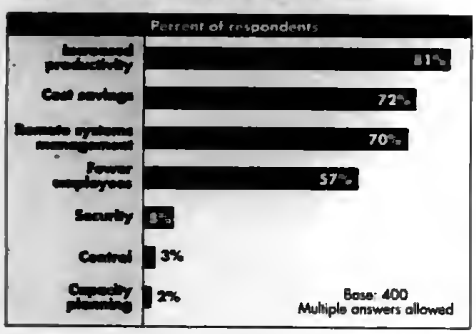
One of the biggest inhibitors to integrating network management is internal company politics, Wood said. Specifically, turf battles between information systems management and LAN administrators cause confusion over who is in charge and what needs to happen.

Until enterprisewide network management solutions exist, some users are maintaining a philosophical attitude.

"It took the mainframe people a long time to get it. It'll probably take five or 10 years before distributed network management becomes routine," Scoggin predicted.

More for less

Productivity gains and lower costs top the list of benefits cited by managers implementing a systems management package



Source: Business Research Group

CW Chart: Stephanie Faucher

NEW PRODUCTS

Gateways, bridges, routers

Cayman Systems, Inc. has introduced GatorLink, an AppleTalk Remote Access (ARA) server that supports Apple Computer, Inc.'s ARA Protocol.

According to the company, GatorLink is the first ARA server that allows up to three remote PowerBook or Macintosh users to simultaneously dial into a network. It can also connect directly to an Ethernet.

The product features enhanced access control; a Motorola, Inc. 68302 CPU optimized for serial performance that provides three integrated reduced instruction set computing engines to handle all serial I/O duties; and support for Security Dynamics' SecurID Ace/Server security system.

GatorLink costs $1,899 per unit.

Cayman Systems
University Park at MIT
26 Landsdowne St.
Cambridge, Mass. 02139
(617) 494-1999

NetPro Computing has introduced OmniWay, a product that provides Banyan Systems, Inc. Vines nsers with interoperability to almost any PC local-area network or host system.

Batch-oriented interoperability is offered with an assortment of platforms, including Microsoft Corp.'s LAN Manager, Novell, Inc.'s NetWare, Digital Equipment Corp's PathWorks and 3Com Corp. platforms. Users can design and develop custom interoperability solutions by using third-party utilities and simple batch scripts. OmniWay requires an IBM PC or compatible, 640K random-access memory and PC/MS-DOS 3.0 or higher.

The introductory price of OmniWay is $2,995 per gateway.

NetPro Computing
Suite E155
8655 E. Via de Ventura
Scottsdale, Ariz. 85258
(602) 998-5008

Network management

Synernetics, Inc. has announced Release 2.0 of its Viewplex Network Management System.

According to the company, the product can now operate as an application under SunNet Manager from Sun Microsystems, Inc.'s SunConnect division. Users can manage their networks and consolidate multivendor network information by using Viewplex and SunNet Manager together from a single platform.

The product has the ability to continuously learn and display updated topology maps of network devices and provides a variety of graphical displays, such as logical network devices and front-panel equipment views for the company's network devices. New tools have been provided to help users locate devices and interpret hardware addresses.

Viewplex Release 2.0 costs $5,000.

Synernetics
85 Rangeway Road
North Billerica, Mass. 01862
(508) 670-9009

Sun unveils ISDN frame-relay products

Sun Microsystems, Inc.'s SunConnect division recently announced SunLink Integrated Services Digital Network (ISDN), frame-relay and Point-to-Point Protocol (PPP) products for Sun SPARCstations.

The ISDN software supports two 64K bit/sec. ISDN channels on a Sun SPARCstation 10. It is scheduled to ship in the first half of 1993, with the station's built-in ISDN board.

The frame-relay product will enable a variety of SPARCstation models to directly communicate over frame-relay links or for one SPARCstation to act as a frame-relay gateway for other stations on the local-area network, Sun said. All three products support Transmission Control Protocol/Internet Protocol, Sun said. Availability is slated for this month.

Meanwhile, The Point to Point Protocol Consortium met to adopt a charter and elect a chairman. The organization now has 30 vendors dedicated to ensuring interoperability of multivendor routing and networked systems via PPP.

ELISABETH HORWITT

Cheapest way to TCP/IP

CONTINUED FROM PAGE 57

for companies such as Delmarva Power & Light Co. that do not want to have to take down the SNA network every time they add new TCP/IP local-area network users that want to access the mainframes, according to John Scoggin, supervisor of network operations at the utility.

Another fast-growing niche in the TCP/IP-SNA integration market is software that lets a PC handle TCP/IP and SNA terminal-emulation sessions simultaneously. Last week, IBM announced TCP/IP Version 2.1 for DOS, which allows a Microsoft Corp. Windows workstation to support up to 255 sessions. The software is said to support 3270, VT220 and Telnet terminal-to-host sessions.

IBM's product also supports Sockets, a multivendor application programming interface that now supports a wide variety of terminal-emulation, electronic-mail and database applications across a wide range of operating environments, IBM said.

The new version also supports NetBIOS networking protocols over TCP/IP, IBM said.

Vendors such as FTP Software, Inc. in North Andover, Mass., and Novell, Inc. also offer products that enable a Windows workstation to set up IBM host sessions over TCP/IP, Gottlieb said. FTP Software currently offers NetBIOS over TCP/IP and plans to offer Sockets support for its PC FTP (File Transfer Protocol) product early next year, a company spokesman said.

Some Delmarva users run FTP Software's Windows-based product over Banyan Systems, Inc.'s Vines LANs, Scoggin said. The utility uses TCP/IP to connect Vines servers and will also use it to link users to a soon-to-be-installed Tandem Computers, Inc. host, he added.

TCP/IP enabled

As a potential stopgap for Cisco Systems, Inc.'s Advanced Peer to Peer Internetwork, Network Software Associates, Inc. in Laguna Hills, Calif., recently announced that its Elite line of SNA PC-to-mainframe connectivity products will run over TCP/IP links. The AdaptSNA LAN Gateway supports TCP/IP-based links among hosts and Token Ring, Ethernet and Arcnet LANs.

The gateway saves companies from having to install a bridge or router to do 802.2 logical link control encapsulation of SNA packets su the packets can go over a LAN, a Network Software Associates spokesman said. And Elite's 3270 over TCP/IP connection gives users more full-function to mainframe resources, such as printers, than would a straight TCP/IP connection to the host, he added.

And on the flip side, Systems Strategies, Inc. will announce Express IP Router/LU6.2, which allows TCP/IP transmissions to be routed over an existing SNA connection, the company said. IBM already offers a similar product, called SNA Link, an IBM spokesman said.



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IBM Business Partner

Stratus still rock solid as it moves CISC users to RISC

BY MELINDA-CAROL BALLOU
CW STAFF

MARLBORO, Mass. — Fault-tolerant systems vendor Stratus Computer, Inc. seems to be holding solid in a weak economy.

According to financial figures announced by the company last month, third-quarter revenue grew 7%, though that was less than investment analysts expected.

While other large-systems vendors are experiencing financial distress, Stratus is growing (albeit modestly) and providing its user base with a smooth transition from its complex instruction set computing (CISC)-based platforms to its current line of Intel Corp. I860-based reduced instruction set computing (RISC) systems.

The company will make yet another move, however, to Hewlett-Packard Co.'s Precision Architecture-RISC within the next two years, which it will also have to handle skillfully.

In addition, competitor Sequoia Systems, Inc. will come out with PA-RISC-based systems in 1993, so Stratus will have to expedite its product rollout schedule. Release of Stratus' PA-RISC-based systems is slated for 1994 at the earliest.

"The real question is how successful they will be in making a third major technology transition in five years," said Chris Christiansen, a senior analyst at International Data Corp. (IDC), a market research firm in Framingham, Mass.

"Stratus right now is in a state of transition; on the product side, the company is moving to a wide range of RISC-based products on both its proprietary VOS and Unix System V, Release 4 operating systems," said Peter Kastner, a vice president at Aberdeen Group, a consulting firm in Boston.

Bigger shake-up

But company officials said that moving to PA will be less of a transition than the current shift from traditional CISC architectures to RISC.

"Because of the way we designed the architecture to decouple the software as much as possible from the underlying architecture, it's relatively easy to migrate to the new systems," said Bill Ledingham, product manager at Stratus. "The process from CISC to RISC has gone well, and we expect that as we ultimately move from our current systems to HP that it will be more straightforward than our current move."

Users said the current migration can be a direct one. Tom Donaghey, manager of distribution systems at The Gillette Co. in Andover, Mass., ported applications easily, as did Ray Knapp, vice president of data processing at Concord EFS, Inc. in Memphis.

CLOSER LOOK at Stratus

"Using the Stratus Link, we were able to link the machines. The data files were on one machine. ... We recompiled the programs, pulled it through the link and brought it all back up," Knapp said.

Stratus officials said they have shipped about 250 of the RISC systems. About half of the company's new business is RISC-based, and half is CISC-based.

Industry analysts, however, said Stratus may have difficulty maintaining growth at a time when the company's corner of the market may be shrinking.

"Stratus is coping with increasing competition from the rest of the industry, which is catching up on overall systems availability and pushing Stratus into a smaller and smaller fault-tolerant corner of the market," Kastner said. "Where fault tolerance is absolutely required, Stratus is a standout leader, but the company will be experiencing greater difficulty in reaching a wide section of the market."

Technologies that raise availability include clustering, redundant arrays of inexpensive disks storage and data replication on multiple servers.

But Stratus officials said that while those options offer "high availability," they do not offer "continuous" availability. Stratus can offer a system with no downtime at a lower cost to users than it would take to create such a system by cobbling other technologies together, according to Ledingham.

"We don't see the market shrinking; we see the overall need for availability growing as an increasing number of applications are brought on-line," he said.

No. 2

Stratus ranks behind Tandem but well ahead of the pack in fault-tolerant system sales

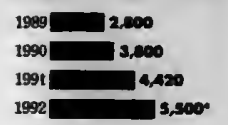
Worldwide product revenues for fault-tolerant vendors for calendar year 1991

Tandem	$1.2 billion
Stratus	$368 million
Sequoia	$59 million
DEC	$58 million
Integrated Microproducts	$4 million

Source: International Data Corp.

Growth track

Stratus' installed base is on its way to a level twice that of three years ago



Source: Computer Intelligence/Infocorp

According to figures from IDC, however, maximum growth for the fault-tolerant market will remain at about 3% to 4% during the coming year, compared with earlier, higher growth rates of 29% to 30%.

"It will never again be as dramatic as it was," said Steve Josselyn, a senior analyst at IDC.

Satisfied folks

Stratus users speak well of the company's fault-tolerant systems and its ability to handle their needs:

➤"We feel that the current RISC machines will do well for most of the rest of this decade," said Tom Donaghey, manager of distribution systems at The Gillette Co., a division of Gillette's North Atlantic Group. "We have those systems in our distribution centers to control shipment of customer orders and inventory so that we know where everything is."

➤"Fault tolerance is key for us," said Bill Morgan, assistant vice president at the Philadelphia Stock Exchange. "Even though we do a lot of support applications on Sun workstations, our main [mission-critical] engines are on the Stratus machines, including equity, trade, order and quote processing. We're bringing in the RISC platforms to improve capacity and get more power for our dollar."

➤"We're a credit-card authorization company, and we [use Stratus] to control purchases and capture data for companies, giving the information back to them in daily reports," said Ray Knapp, vice president of data processing at Concord EFS, Inc. in Memphis. Regarding future plans for PA-RISC platforms, he said, "We try to keep current, but we won't be the guinea pig."

MELINDA-CAROL BALLOU

HP's MPE still a contender

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — A cautionary flag that reads "don't throw the baby out with the bathwater" could well hang in the office of Hewlett-Packard Co.'s Wim Roelandts.

The baby, in this case, is more like an agile grandfather: the proprietary MPE operating system that drives the widely installed but maturing HP 3000 minicomputer series.

Roelandts, who replaces new Chief Executive Officer Lew Platt as head of HP's entire computer business, and new minicomputer chief Rich Sevcik have a careful balancing act to maintain.

While they lead a charge into the open systems world with the HP/UX Unix operating system running on HP 9000 minicomputers, they must be careful not to alienate the hordes of loyal users running informatioo systems shops on the HP 3000.

While the two hardware platforms are virtually the same, there is a world of difference in operating systems and related software on which IS shops spend millions of dollars to run their businesses.

Roelandts makes no bones about the fact that HP's minicomputer future lies with Unix. "For our Unix strategy, the No. 1 objective is to grow," he said. "For our MPE strategy, our No. 1 objective is to maintain the installed base."

He went so far as to say an MPE phaseout "is something that could happen over time" but added that "it won't happen in the foreseeable future," meaning the next five years.

Typical HP/UX users, he said, are more interested than MPE users in adopting the latest "hot boxes" and aggressively moving to new technology that they install on their own. MPE users tend to look for solutions that the vendor installs, he said.

Analysts said HP will hit a crossover point this year when 9000 sales will outpace 3000 sales. Roelandts ooted that the current split is about 50/50, but "in the last couple of months, there were more 3000s sold."

He also noted that about 20% of MPE orders are for new accounts. While the 9000 Unix business grew 44% during fiscal year 1992, the MPE business nudged up only 5%, he said.

Standing firm on MPE

Many MPE users have no intention of migrating to Unix. With MPE well entrenched throughout their companies, they have no interest in going through the costs and headaches of conversions. Furthermore, users' intense loyalty to MPE has much to do with MPE simply being, in the minds of many users and analysts, a better operating system and one that is better optimized than HP/UX to the Precision Architecture-RISC chip that drives both the 3000 and the 9000.

"I believe in the genetic history of an operating system," observed Eric Fisher, a principal at Fisher Systems Consulting in Groton, Mass. He noted that for 20 years, MPE has evolved from the ground up to serve the multiprogramming and transaction processing needs of minicomputer users.

"HP/UX is a robust implementation of Unix, but it's still Unix," he said. Users said one weak HP/UX feature is security. "It's kind of an add-on in HP/UX," Fisher said.

"Unix has fewer safeguards than MPE," agreed Rodger Lindquist, manager of business systems development at Bio Rad Laboratories in Hercules, Calif., which uses both 3000s and 9000s. "The way you open and close files, you can get hurt."

Continued on page 70

Tool converts AS/400 apps to Unix

BY KIM S. NASH
CW STAFF

ANAHEIM, Calif. — Attendees of Common, a large IBM midrange user group that held its annual meeting recently, saw the unveiling of a conversion tool designed to take IBM Application System/400 applications to Unix.

System Software Associates, Inc. (SSA), a large third-party software maker in Chicago, unveiled AS/Set WDK-U, which lets AS/400 users "factor Unix into their long-term strategy without measurably increasing development time or cost," claimed J. V. Franch, SSA's director of technology.

But the catch is that the product will translate only those applications that were originally built with AS/Set, SSA's application development workbench. SSA applications and tools are installed at about 6,700 sites worldwide, according to SSA.

"If it was truly universal, it would be hard for me to imagine not buying it," said Paul Mitnick, president of Computech Systems, the information systems arm of The Equity Group Investments, Inc. in Chicago.

Mitnick is in the midst of migrating financial applications from IBM System/38 and AS/400 boxes to dual RISC System/6000s, but WDK-U is not useful to Equitable because its software has been customized in-house. "But I bet it makes some people feel better that they have more doors open to them," he said.

Limited need

"It's nice to be able to tell [AS/400 users] that they can run their applications on Unix in the future, but I don't think very many people will do it," agreed David Andrews, an analyst at ADM Consulting, Inc. in Cheshire, Conn.

AS/400 shops generally choose the machines over Unix boxes for specific reasons and are not inclined to shift strategies now, Andrews explained.

SSA is "hedging its bets" with this product, according to Andrews, and is using the Unix angle as an insurance chip against losing potential new sales to users who are unsure of which platform they will be on a few years from now.

Larkspur, Calif.-based Synon Corp., a rival on the AS/400 computer-aided software engineering front, is expected to release a similar tool soon.

AS/Set WDK-U regenerates C code for Unix machines from IBM and The Santa Cruz Operation. It is priced at $15,000 for a single-user version and $50,000 for the multiuser edition.

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IN BRIEF

CA consultant program grows

■ **Computer Associates International, Inc.** has expanded its Consultant Relations Program. The three-tiered program consists of registered consultants under a base-level service under CA's Consultant Relations Agreement. Under the midlevel program, called service providers, CA field personnel are now available to book service business directly, relying on third-party providers from within the Consultant Relations Program. The top tier in the program, called certified consulting partners, is open only to those customers with "long-term business relationships with CA" or those who have participated in Pansophic Systems, Inc.'s Certified Business Associates program.

■ CA has also extended its CA-Unicenter for Unix systems management package to **Pyramid Technology Corp.**'s MIServer systems. The port is expected to be available for general release sometime next year. CA had previously announced CA-Unicenter for Unix ports to Hewlett-Packard Co., Sun Microsystems, Inc. and Sequent Computer Systems, Inc. Unix-based computing platforms.

■ **Andersen Consulting** has introduced usage-based pricing for its MAC-PAC IBM Application System/400 software package as an option to tiered pricing for the software products.

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Information Builders plots step-by-step DBMS linking

BY JOHANNA AMBROSIO
CW STAFF

NEW YORK — If universal data access is your goal, Information Builders, Inc. has introduced a new way of getting there, one small step at a time.

Information Builders' older product set, called EDA/SQL and installed at 300 sites, lets customers link front-end tools, including Lotus Development Corp.'s 1-2-3, with more than 50 database management systems, such as DB2 and Oracle Corp.'s Oracle. The product promises virtually any-to-any connectability.

But now, Information Builders has introduced a way for customers to link just a couple of databases instead of committing to the full-blown implementation. These EDA/SQL gateways will link 50 front-end tools to IBM's DB2 and SQL/DS DBMSs.

At $40,000 to $70,000 per gateway, this approach costs about half as much as an entire EDA/SQL, according to John Senor, a company vice president. Also, a copy of EDA/Link for $175 per copy is required on every workstation. "A lot of users require an incremental approach to data integration," Senor said. "This has been brought on by the blossoming of the client/server market, where a specific set of users need access to a specific set of data. The application may be downsized, but the data is much harder to downsize."

In the first half of 1993, he added, "we will announce gateway solutions for other database products that do not necessarily reside on the mainframe, including Unix, VAX and Hewlett-Packard." Information Builders will also sell the gateways through alternate distribution channels to be announced later, Senor said.

EDA/SQL users said the gateway approach sounds like a good idea, although not necessarily for them. "We're already committed to the full-blown implementation," said Wally Estes, a program manager at the U.S. Postal Service in Washington, D.C. "But the gateway facility might appeal to those who need a lower-cost solution."

Les Bain, manager of data resources at Del Monte Foods in San Francisco, said, "It's a change in marketing, not in strategy. The all-at-once approach is intimidating to a number of people; point-to-point is a lot more focused."

These customers said their data access strategies are proceeding apace. At the Postal Service, a corporate executive information system (EIS) is being used by approximately 15 senior executives, with a total of 1,000 users scheduled.

The Postal Service is using EDA/SQL to connect Information Builders' Focus DBMS to Lotus' 1-2-3 on PCs. Also connected in the mix are OS/2 and Digital Equipment Corp. VAX servers. At the moment, the EIS comprises data on revenue, budget, number of employees, service indicators and performance.

Still to be added to the system are marketing and customer data, Estes said.

At Del Monte, Bain said, the goal is to enable 80% of end users to access all corporate data by the end of next year. "We have the classic situation at a large company: a real mix of databases because of acquisitions," he said. These include DB2, Supra, Total, Adabas and Nomad.

By the end of this year, Bain said, Delmonte will have EDA/SQL in production and will have all the MVS DB2 data available to users.

Blue Cross/Blue Shield of Minnesota is using EDA/SQL as a decision-support tool for actuarials. "We will expand this into the claims division for 1993," said Dan Schultz, senior IS consultant. "The whole concept of sharing data is very new."

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Wang launches imaging tools

Firm continues product announcements, tries to stay afloat

BY KIM S. NASH
CW STAFF

LOWELL, Mass. — Attendees at next week's Technetron '92, a conference for Wang Laboratories, Inc. users, will for the first time see non-Wang-specific vendors hawking plans for moving VS users to Unix platforms.

Meanwhile, an August filing for Chapter 11 bankruptcy protection has not staunched Wang's flow of product announcements. It has introduced software and hardware in keeping with Office/2000, an office automation strategy pegged on the Wang Integrated Imaging System.

But it is too soon to tell whether the survival gambit is working. Wang has taken on the posture of a duck: It appears to sit serenely on the pond, while underneath the surface, feet are paddling furiously to propel it forward.

Forward, in this case, means toward Office 2000, which must incorporate hardware from other vendors to be at all successful, according to analysts. Wang itself has said IBM's RISC System/6000, which Wang resells, is the centerpiece of the framework. Toward that end, Wang recently unveiled the following products:

- **Open/Image for AIX**, introduced in June, began shipping last month. It is a three-piece package: imaging systems software, priced at $1,600 per node; application programming interface software, priced between $4,300 and $29,900; and Wang RISC Series hardware — relabeled IBM RS/6000s — priced from $19,500 to $97,500.
- **Open/Image for CICS** is a set of tools designed to make it easier to build image functions into IBM CICS mainframe applications. Prices fall between $21,200 and $128,200, depending on platform.

Remaining products in the planned 37 new VS-related wares due out this year are on schedule, according to Wang.

It's show time

A financial reorganization plan is due to U.S. Bankruptcy Court in Boston by Dec. 16, and Wang has slated its annual shareholders' meeting for a week later.

But before then, the company will have to convince its installed base of approximately 19,000 users worldwide that it is still viable. Technetron '92 will likely be key to reinforcing that message. The company must keep VS users confident while remaking itself into a software and service provider.

Among those scheduled to demonstrate Unix products at the show are Hewlett-Packard Co. and Sun Microsystems, Inc. Microsoft Corp. — a member, along with IBM, of a creditors' committee appointed to oversee Wang's restructuring — will also attend. Next, Inc. honcho Steve Jobs will deliver a keynote address, as will Wang Chairman Rick Miller, Technetron officials said.

Third-party product and service suppliers catering to VS customers will also be on hand. And they, unlike Wang, are thriving. Companies such as MacSoft, Inc. in Bakersfield, Calif., and GF Consulting Services, Inc. in Langhorne, Pa., offer parts and support for systems at discounts to Wang's prices. They have also seen an upswing in interest in migration services to Unix systems and PC local-area networks.

HP's MPE still a contender

CONTINUED FROM PAGE 67

Users also lauded MPE for its relative ease of use.

"The commands are not as cryptic as the commands in Unix," said Mike Meinz, principal technical consultant at General Mills, Inc. in Minneapolis, which once began porting a distribution system to an HP 9000 but reverted back to MPE and the 3000. "Unix was originally designed for one person in the AT&T labs. That's why there's a 'Uni' in the name."

He further noted that MPE has a simple directory structure, "whereas in Unix's directory structure, you can have multiple levels."

Users also pointed out that MPE comes with a database, while HP/UX does not.

Future challenge

So HP's challenge is to continue to support the installed base still committed to MPE, to advance the operating system and to assuage users' concerns of being deserted.

"The feeling of the MPE crowd at times is that HP has been neglecting their bread and butter in their infatuation with all this new stuff," Fisher said.

One move that may have restored user confidence recently was the appointment of Sevcik to head the minicomputer business. Sevcik was formerly the head of HP 3000 operations.

HP is also continuing to open the MPE operating system by including Posix hooks. In fact, it now calls the product MPE-IX to reflect its Posix characteristics, although the company has not yet delivered full Posix functionality. A new release, 4.5, is due this month, which HP said will be 80% Posix-compliant. Roelandts said full compliance will come by mid 1993.

HP also boasts of the ease with which software can be ported to MPE, a process that Meinz attested to.

"Today, you can take Unix software and port it to MPE with the same degree of difficulty as if you were porting it to another version of Unix," Roelandts said.

Showdown

Hewlett-Packard's MPE shows strength on usability issues when pitted against Unix

Double standards

MPE advantages vs. HP/UX (Unix)*
- Better security and integrity.
- Less arcane instructions.
- Optimizes to HP's PA-RISC processor.
- Comes packaged with a database.
- Better batch processing.

MPE customer profile vs. HP/UX**
- MPE: Looking for total solution installed for them, not looking for latest technology.
- Unix: Early adopters of new technology and "hot boxes"; more inclined to install themselves; price aggressive; downsizing.

Source: * Users and analysts, **Hewlett-Packard Co

The Editors were unbiased, objective, impartial, and impressed.

PC MAGAZINE

EDITORS' CHOICE

• Sybase SQL Server for NetWare

For its state-of-the-art feature set and blinding speed, Sybase SQL Server for NetWare wins our Editors' Choice. The product supports on-line backup, stored procedures with control logic, server-based referential integrity through triggers, and more.



Server NLM earns an honorable mention. Though it lacks some of SQL

platforms, and Novell's NetWare SQL is especially well suited for companies

support is relatively light, SQLBase is a good choice for companies without an existing database.

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NEW PRODUCTS

Database management

Micro Data Base Systems, Inc. has started shipping Object/1 Professional Pack for Oracle Corp.'s relational database management system.

Automatic data transfer to or from windows painted in Object/1 speeds applications development, the company reported. With Oracle's SQL language, applications can query and update data. Two interface levels are offered. Direct calls to the Oracle RDBMS are provided by the low-level interface.

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Object/1 costs $995.

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Utilities

BlueLine Software, Inc. has introduced the Network Performance PowerPak, a consolidated offering of software performance monitoring tools.

According to the company, PowerPak enables users to measure response time as seen by the user. All of the key elements affecting that response time can be viewed through a complete menu-driven interface. Interactive viewing of historical data for problem resolution is provided by a Recall facility, and full report writing is available for historical analysis and management planning.

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Programart Corp. has announced the APMPower application performance analysis system.

According to the company, APMPower is a software product that lets users interactively analyze the performance of IBM MVS applications at their OS/2 workstations. It works with Programart's Strobe Application Performance Measurement System.

Data collected by Strobe is downloaded from the mainframe to the workstation. The data is then interpreted and followed while it is being displayed in histograms and graphs.

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Software application packages

Multiview Corp. has introduced Multiview Fixed Assets, a fixed-assets management system designed for the Hewlett-Packard Co. 3000 computing environment.

According to the company, the system helps users perform comprehensive tax, risk and financial management and helps them effectively manage property and maintain accurate asset inventories.

The product also has the capability to track assets from acquisition through retirement.

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Pricing ranges from $2,500 to $20,000.

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Processors

EMC Corp. has announced the EMC ES/9121 memory cards designed for IBM Enterprise System/9121 processors.

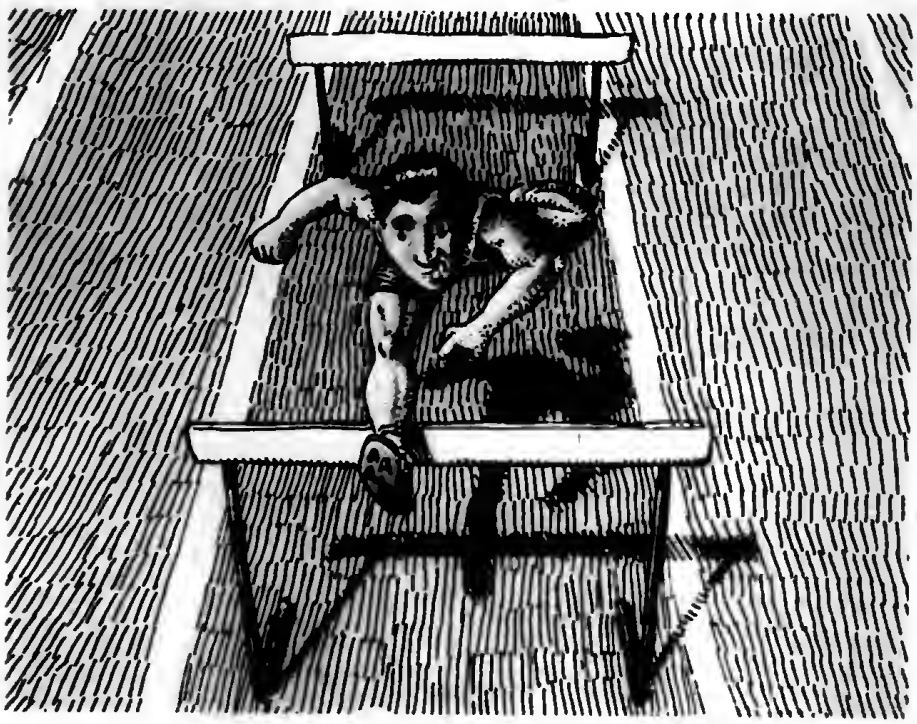
The memory cards use 65-nsec, 4M-byte dynamic random-access memory. According to the company, state-of-the-art technology provides maximum reliability and response time improvements for I/O-bound users.

The ES/9121 product line is made up of memory cards with 16M- and 32M-byte capacities that are installed in sets of four and eight. Memory can run either in the ES/9121 system exclusively or with IBM memory.

Memory costs $1,500 per megabyte.

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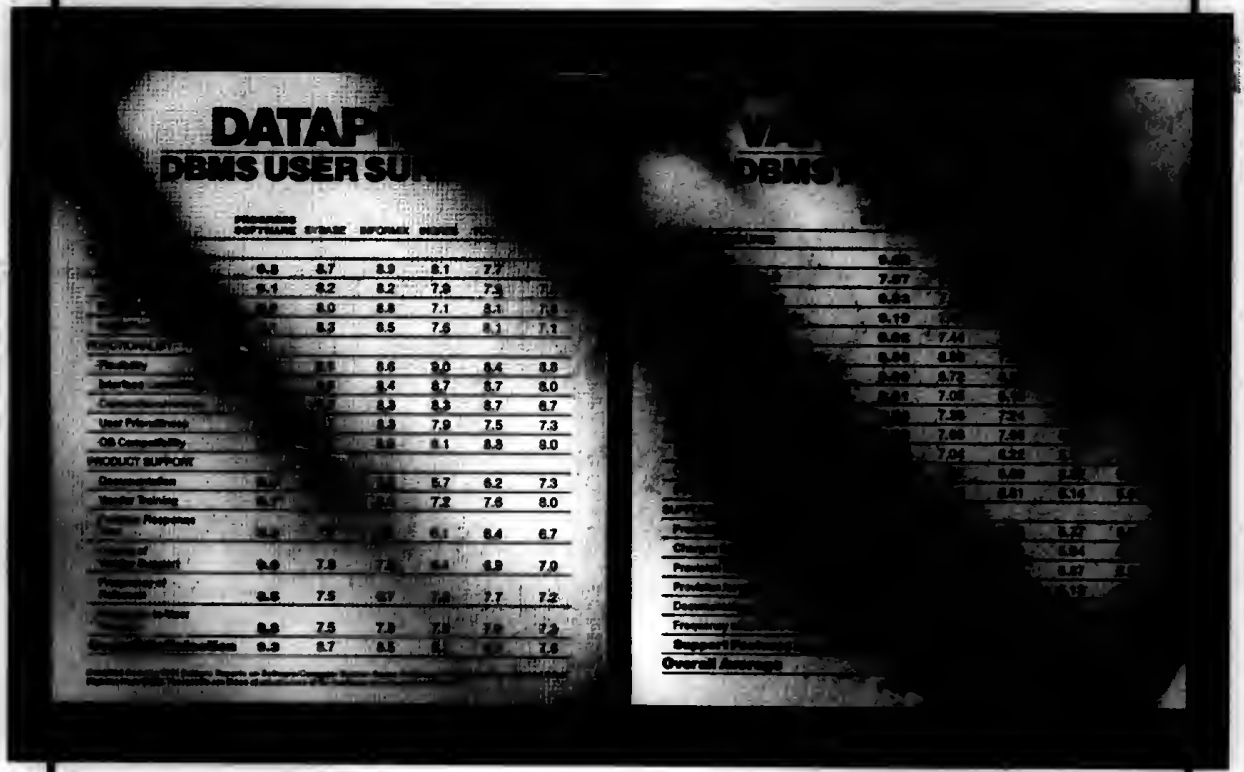
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CPWADV1102

Tool provides database objects for development

BY GARRY RAY
CW STAFF

GOLETA, Calif. — Client/server application developers can reduce hand-coding of SQL statements with a new tool from Smartstar Corp.

Smartstar Vision provides a visual programming environment in which programmers and users can rapidly develop database applications using object-oriented techniques and facilities, according to officials at the company.

Currently available for Sun Microsystems, Inc.'s SPARCstation and Digital Equipment Corp.'s Ultrix and VMS, Smartstar Vision comprises a collection of database objects that provide most of the functions typically found in a SQL database application, Smartstar President John Markel said. "What we've developed is a complete SQL application development system that requires minimal coding," he said.

Support is provided for the Unix CISAM and VMS RMS databases, as well as Oracle Corp.'s Oracle, Sybase, Inc.'s Sybase, The Ask Cos.' Ingres and DEC's Rdb on an optional basis.

Standard functions

Included in the Smartstar Vision developer facility are objects that can query, sort, format and update database information. The objects also support standard SQL database functions such as table joins, keys, data types, scaling and referential integrity, Markel said.

Although programmers need not write any additional code to support these functions, Markel said, an interactive SQL facility is provided to add complex queries to an application or to access stored procedures.

Database operations are performed through a logical database dictionary (LDB), which Markel described as a "layer" of Smartstar Vision software that resides between an application and physical databases. The LDB dictionary stores metadata about all available databases and is used by the development facility and by completed applications to access physical databases residing on a system, Markel said.

Update routine

"You don't have to know anything about the physical database," said Keith Therrien, a Reading, Mass.-based independent consultant working at Arkwright Mutual Insurance Co. in Waltham, Mass. "Whenever the physical database changes, our database administrators have a routine, which goes out and updates the [Smartstar Vision] LDB dictionary."

Therrien, who has been using a prerelease version of the software since April, said the 600-employee Arkwright will soon use it in the company's Massachusetts headquarters and in 10 regional offices, primarily because the tool provides "a major leap from hard-coding SQL statements" with only "10% of the coding we used to do." With those savings, "the rest of the [development]

Continued on page 76

Sybase fights for developer loyalty

Hopes to lure back customers with a new generation of graphical tools

ANALYSIS

BY JEAN S. BOZMAN
CW STAFF

During its five-year history, Sybase, Inc. has created a smorgasbord of application development tools to complement its relational database management system. But users who bypassed Sybase tools in favor of third-party products several years ago seem generally happy with their choices.

Now, industry analysts said, Sybase's challenge is to entice such users back into the fold with a new generation of graphically oriented programmer tools.

Well aware that its tools have taken a backseat to its relational database, $160 million Sybase reorganized its product divisions last month. A Tools Technology Group, headed by Sybase cofounder Robert Epstein, will integrate a wide variety of character-based and graphical development tools (see chart). The Sybase RDBMS engine and connectivity software will be developed separately.

"It's a challenge for them to catch up and to be seen as a leader in both database and tools," said Tony Percy, a vice president at Gartner Group, Inc.'s Software Management Strategies Service. "Their tools are not state of the art, and many of their best sites in fact use third-party tools. It will be tough to leap over vendors who specialize in portable tools."

Percy cited Uniface Corp. in Alameda, Calif., as one of the strongest suppliers of portable software tools to Sybase users.

Still, some longtime users of Sybase's aging APT Workbench are happy to use it as is because they have little or no need for graphical user interfaces (GUI). "Our environment is 90% terminal-oriented," said Doug Rainey, a systems analyst at a Jackson, Mich., location of Aeroequip Corp., which makes components for the airline, aerospace and automotive industries. "It fits our environment. It's unfair to compare it to a tool that's for GUIs only. This thing runs on terminals and in a graphical mode, and to compare it with something that's only for GUIs isn't fair."

Many other Sybase users veered to third-party tools because they were unhappy with APT Workbench's lack of GUI support or with its limited functionality. To address those needs, Sybase shipped APT Workbench 5.0, a revised version that provided emulation of some GUIs and support for several foreign languages.

But in 1990, when Textron Financial Corp. in Providence, R.I., wanted to build Microsoft Corp. Windows applications, APT Workbench did not support GUIs at all. Instead, the leasing division of Textron, Inc. chose Powersoft Corp.'s PowerBuilder, along with Sybase's EasySQR report writer. The 300-person division has a network of local Unix servers running the Sybase RDBMS and accessing IBM mainframe data over a long-distance network.

"By choosing third-party tools, we've given up simplicity in terms of support, problem resolution and even design," said Paul Hamel, vice president of systems and planning at Textron. However, another round of client/server development, beginning in 1993, may come in time for a new generation of Sybase graphical

Continued on page 77

Sybase toolbox

Character-based; some GUI support	Multiplatform	$1,000 to $128,000
Object-oriented multimedia	Sun workstations	$20,000 to $150,000
Graphical upper-CASE	Apple Macintosh	$3,900 to $8,900
Fourth-generation language and report writer	Multiplatform	$595 (single user) to $128,000
Operation-control package	Sun Unix; DEC VAX/VMS	$8,250 to $51,230

CW Chart: Stephanie Faucher

By the end of this week Computerworld readers will have spent over $68.5 Billion on Information Technology this year – representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD

Reusable software library now available

Allows coders to 'check out' software modules

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C.— Westinghouse Electric Corp. is betting that the same automated software library it has used to manage reusable code for defense contracts will be a productivity booster in the commercial sector, too.

The Westinghouse Electronic Systems Group in Baltimore recently introduced its Reusability Search Expert (ReuSE) for use in transportation, law enforcement and commercial information systems.

The ReuSE software allows a company to create a fully cataloged library of its custom software so software engineers can "check out" modules of software for reuse, Westinghouse officials said at a press conference last week.

Like any public library, ReuSE allows an administrator to decide what homegrown software will be accepted by the library and then catalog it. Software engineers can undertake key word searches and browse through abstracts or actual source code.

Browsers can also find out the "pedigree" of the software, including who wrote it, the software's limitations and any legal or licensing constraints, Westinghouse officials said. The library includes all of the associated documentation, including user manuals.

> REUSE TRACKS all users of a software version and notifies the users when the library is updated with a new version.

When a library patron finds something to check out, the code can be transferred to computer-aided software engineering (CASE) products using the IEEE CASE Data Interchange Format, according to Eric Beser, a senior software engineer at Westinghouse.

Perhaps the most important feature is in the area of version control. ReuSE tracks all users of a software version and automatically notifies the users when the library is updated with a new version. The software also keeps track of those users who still have old versions.

ReuSE is available now and costs about $36,000. The software currently runs on Digital Equipment Corp. VAX VMS systems and Sun Microsystems, Inc. systems. It uses its own hypertext database engine, so ReuSE does not require a third-party database management system to work.

Beser said the closest competitor is a software library product from SofTech, Inc. in Waltham, Mass., which requires Oracle Corp.'s database system.

One of the emerging markets for ReuSE is defense contractors who need a place to stash software written for projects that have been "mothballed" by budget cuts, Beser said. If a use for the software develops many years later, the library will have the critical information.

Tool provides database objects

CONTINUED FROM PAGE 75

time is spent with users to get information about their applications or to have them actually build the [application] windows they want."

Arkwright's users will run completed client applications on Microsoft Corp. Windows-equipped PCs under Xcursions, a Windows program that translates X Window System-based applications, such as those created using Smartstar Vision, for use in the Windows environment, according to Therrien.

Despite the small size of Smartstar compared with other software companies dominating the client/server tools wars, analysts said Smartstar Vision will create a new benchmark for other software vendors to note. "It's a civilized approach to SQL access," said Rikki Kirzner, principal analyst for Unix and open systems computing at Dataquest, Inc., a market research firm in San Jose, Calif.



Smartstar Vision *provides a collection of database objects that offer most of the functions found in an SQL database application*

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Sybase fights for developer loyalty

CONTINUED FROM PAGE 75

tools, said Hamel, who has participated in Sybase customer councils on future product requirements.

Sybase has tried to leapfrog database competitors by acquiring small vendors and their new technologies. It acquired SQL Solutions, Inc., a Burlington, Mass., database consulting firm with rights to the SQR report writer, several years ago.

In March 1991, Sybase acquired Deft, Inc. in Toronto, which had an upper-CASE tool and data repository for use on Apple Computer, Inc. Macintosh computers. Sybase is still working to port Deft onto Unix and PC desktop platforms, and it provides a "bridge" to IBM-compatible OS/2 machines running Sybase relational databases.

This year, Sybase invested more than $60 million to acquire Gain Technology, Inc. in Palo Alto, Calif. The target, analysts said, was a flexible object-oriented applications development framework capable of creating multimedia applications.

"The database engine is going to be the cash cow for Sybase," said Judith Hurwitz, president of the Hurwitz Consulting Group in Newton, Mass. "But now, you are going to have the Trojan horse, which is a beautiful graphical development environment for rapid application development and prototyping."

Industry analysts noted that Gain Technology is wired to support multiple relational databases, including the Oracle Corp. database and at least one object-oriented database from Objectivity, Inc. That would give Sybase an edge over larger database vendors such as Oracle.

SYBASE HAS tried to leapfrog database competitors by acquiring small vendors and their new technologies.

Flexibility possible

Gain's technology can be used to create flexible applications, users said. "We've used Gain as an advanced interface to complex simulation software," said Herbert Lichtman, manager of Advanced Simulation Technology at government contractor General Research Corp. in Nashville.

"You can connect an application to two [relational] databases simultaneously and switch back and forth between them," he said.

Sybase executives hinted that a strategic announcement next week would include forthcoming object-oriented tools.

Centerline revises Objectcenter workbench

BY GARRY RAY
CW STAFF

Centerline Software, Inc., the Cambridge, Mass.-based developer of a variety of C and C++ application development tools for Unix, recently introduced Version 2.0 of its Objectcenter C++ programming workbench.

The workbench, which provides facilities for C and C++ programming, includes a number of revisions to existing tools, along with a C++ compiler, which was oot available in earlier versions of the product.

According to Centerline, Objectcenter 2.0 provides a C and C++ mixed language capability that allows for incremental shifts to C++.

Among the enhancements made to Objectcenter are precompiled header files that were designed to reduce compilation time, support for C++ templates and user-selectable support for the Open Software Foundation's Motif interface or Sun Microsystems, Inc.'s Open Look. Also included in the enhancements is and an improved debugger that provides runtime error detection and source-level debugging of object code.

ObjectCenter 2.0 is available on Sun Microsystems, Inc.'s SPARCstations and Hewlett-Packard Co.'s HP Apollo 9000 Series 700 workstations for $3,995, the company said.

IN BRIEF

SHL to sell Bachman tools

■ Outsourcer SHL Systemhouse, Inc. in Ottawa plans to use and resell tools from Bachman Information Systems, Inc. SHL Systemhouse also joined Bachman's Development Partner Program, which means SHL will help define new products for the Burlington, Mass.-based computer-aided software engineering firm.

■ Integris, an independent unit of Bull HN Information Systems, Inc., said it will use tools from Easel Corp. and Wall Data, Inc. to tack graphical user interfaces onto IBM CICS mainframe applications. Integris also plans to support an interface builder for X terminals connected to Unix systems and Microsoft Corp. Windows-based PCs in December.

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NEW PRODUCTS

Application development tools

Integrated Systems, Inc. has started shipping Version 3.0 of SystemBuild, an integrated graphical model editor and simulator.

When used in conjunction with the company's Matrixx math and analysis software, SystemBuild accelerates the design and debugging of linear and nonlinear dynamic systems.

New features added to this version include Interactive Simulation; QuickSim Integration, a fixed-step integration algorithm that allows linear and nearly linear systems to be simulated; a Minstep feature for Variable-Step Integration that allows enhanced performance for "switch-event" problems; improved Trim Function; and Enhanced Licensing-Floating Display, the company reported.

Pricing for SystemBuild Version 3.0 starts at $8,000.

Integrated Systems
3260 Jay St.
Santa Clara, Calif. 95054
(408) 980-1500

Statistical Sciences, Inc. has announced Version 1.0 of S+Interface.

According to the company, the tool kit was designed to assist users who use custom versions of S+ data analysis software on Unix workstations.

Custom menu-style interfaces can be created, and from another C application, users can call an assortment of proven data analysis functions of S+, the company reported. Modificatioos can be made to application-specific programs that oeed advanced statistics and data analysis, and the product provides access to S+ functions from another application as if S+ were a subroutine library.

The perpetual license fee for S+Interface is $1,350.

Statistical Sciences
Suite 500
1700 Westlake Ave. North
Seattle, Wash. 98109
(206) 283-8802

Rational has introduced Insight, a reverse-engineering and browsing tool.

According to the company, the tool was designed to make Ada software easier to understand, build, re-engineer and maintain. Information is gathered about the code and then Insight creates and displays diagrams on a workstation.

The product is integrated with a software engineering environment for the development of complex applications known as the Rational Environment. As a client/server application, it runs concurrently on the Rational Environment and a workstation.

Insight provides module diagrams that can be interactively browsed, printed or included in documentation.

Insight costs $3,000 per user.

Rational
3320 Scott Blvd.
Santa Clara, Calif. 95054
(408) 496-3600

XVT Software, Inc. has announced support for Microsoft Corp.'s Windows New Technology (NT) with the latest version of the XVT Portability Toolkit.

According to the company, users can build a single C or C++ applicatioo and recompile to every major graphical user interface (GUI) without rewriting code. A 32-bit linear-memory model is used for applications built with the product.

Complete memory protection for each application is provided by the XVT Portability Toolkit when used in conjunction with NT's preemptive multitasking system.

For faster and easier GUI development, the product can abstract numerous low-level native calls into single XVT calls, the company reported.

Pricing for the Portability Toolkit for NT costs $1,450 on Intel Corp.'s I486-based systems and $4,400 on workstations.

XVT Software
4900 Pearl East Circle
Boulder, Colo. 80308
(303) 443-4223

Languages

American Interface Computer, Inc. has announced IF/Prolog Version 4.0 for fault-tolerant systems from Sequoia Systems, Inc. and Hewlett-Packard Co.

The company has ported Version 4.0 to the HP 9000 Series 1240 and the fault-tolerant Series 400 systems from Sequoia. The systems use up to 64 Motorola, Inc. 68040 processors with a fault-tolerant Unix version, the company reported.

For either machine, the fault-tolerant IF/Prolog costs $12,500.

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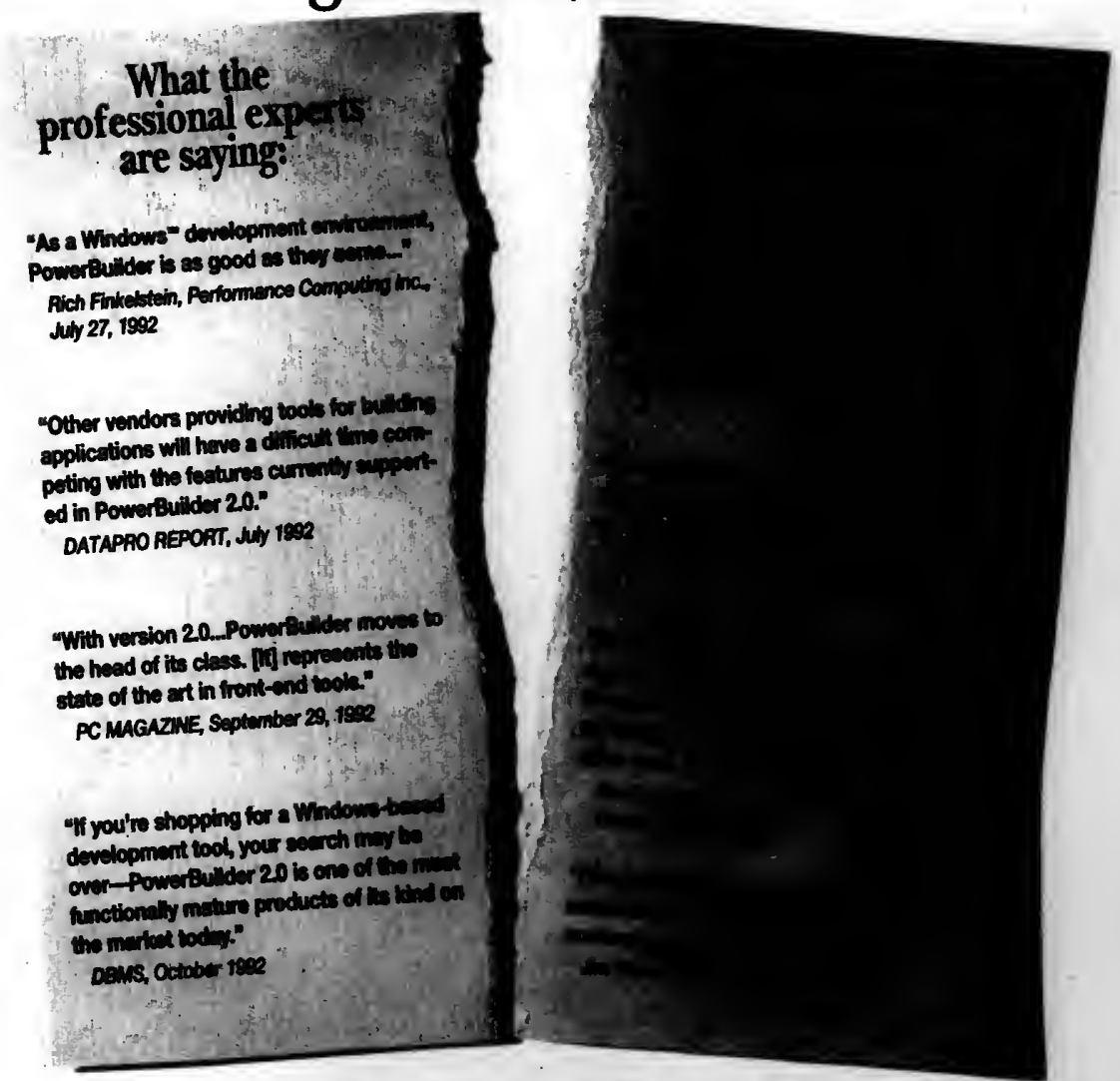
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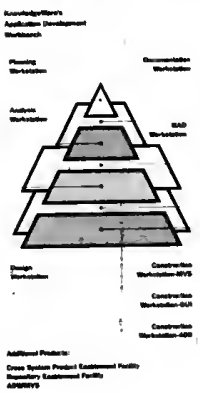
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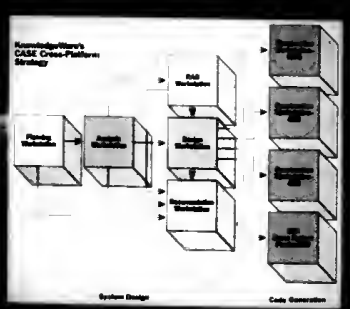
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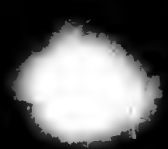
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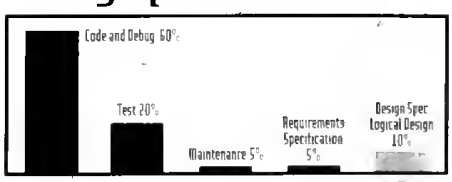
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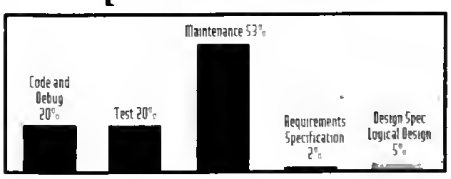
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How developers think they spend their time.



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Source: Pittiglio Rabin Todd & McGrath, management/consultants. **Electronic Business,** June 1992

ADW/Pinpoint documents the code, charts processing paths, and highlights potential trouble spots. And ADW/Recoder dramatically improves program quality by automatically restructuring problem code.

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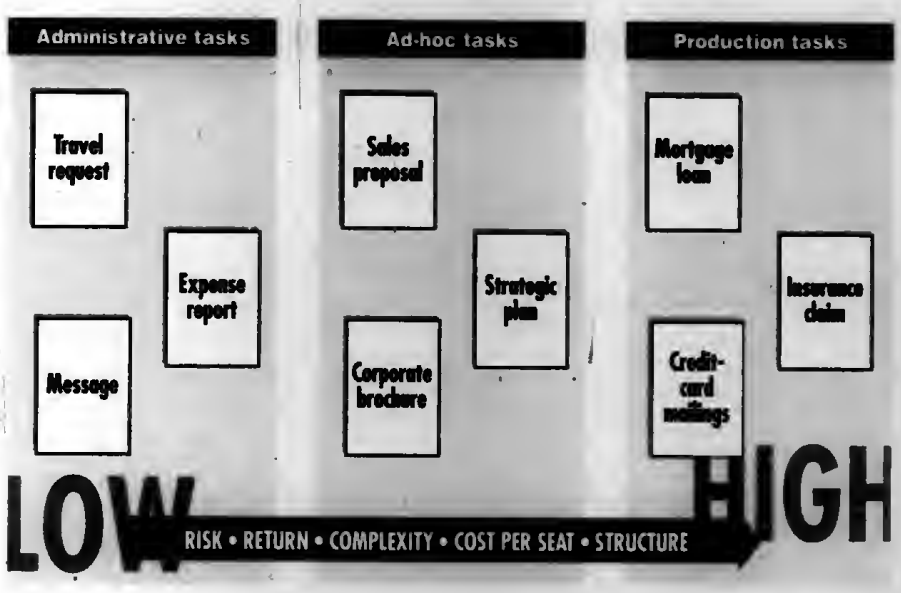
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There's more than one kind of

work-flow software



BY SCOTT C. McCREADY

In these days of fiscal conservatism, limited information systems resources and questionable financial returns on IS investments of the past, you're probably wondering, "Why should I care about work-flow software?" You may even be wondering what the heck it is. It might be best to explore what

work-flow software is *not*; with "work-flow" reaching the same popularity level as "re-engineering," definitions are getting vaguer and more diverse.

Some vendors say work-flow software allows you to route work from one person to the next, a capability known as "programmic control." A popular example is a travel request form that is electronically and automatically routed through the approval process. The benefits include reduced delay of in-baskets and the fact that workers can stop worrying about where the work should go next or where it has been before.

This definition is partially true, but work-flow software is much more than simply routing work from one desk to the next in a rational manner. It also involves a development environment that allows you to detail a series of events and triggers for any structured or unstructured business process.

In fact, the hard part of implementing a work-flow system tends to focus more on the operations that take place once a case is being worked on at any one desk. This generally has much more to do with forms, user interaction and procedural development than the flow of work.

You can actually learn a lot about work flow by looking at what the imaging vendors have done in this area, although work flow and imaging do not necessarily go hand in hand.

Imaging origins

Imaging was the first technology to make people see the irrationality and inefficiency of some of their business processes. Implementors realized they needed a product that could make proposed changes in the way electronic — rather than paper — documents flowed.

It wasn't long before these companies realized that the people who best understood the business process were in user departments, not in IS. They then wanted a development environment that end users could interact with.

The idea of processing electronic images, or documents, in parallel rather than the old serial, paper-based process fostered the need for placing the flow of work under programmic control.

The imaging vendors, such as **FileNet Corp., Sigma Systems, Inc.** and **Plexus Software, Inc.**, realized that today's development environments were simply too low level for those types of requirements. Consequently, they developed higher level development environments that are critical to work-flow software.

Continued on page 86

McCready is a principal at IDC/Avante Technology, a market research firm in Framingham, Mass. The company recently completed a four-part report on work-flow software, "Work-flow software: The challenge for the '90s."

Work-flow software

CONTINUED FROM PAGE 85

Given enough time and money, C, Cobol or even PL/1 can do exactly the same as work-flow software. But they are not optimal for the following reasons:

•The business process is typically owned by the line-of-business manager, who must convey a detailed understanding of the flow of work to the person ultimately responsible for development. Commonly, something gets lost in the communication, and the development process becomes iterative and lengthy.

•By hard-coding the application every time there is a change in procedure or in business needs, IS has the burden of making application updates.

•Current development tools require processes to be specifically defined and capable of being reduced to an algorithm. Many business processes are not easily defined.

Work-flow software, which is typically a fourth-generation language (4GL) environment, is the first software to lend itself to undefinable business processes. It also normally has a good forms capability associated with it. Unlike older languages that require you to specify "edit," "debug" and "test" phases, work-flow software allows yon to run and test and change the application all at the same time.

WORK-FLOW software can be used to automate any application, from processing expense forms to underwriting insurance policies.

Three types

Work-flow software can be used to automate any application, from processing expense forms to underwriting insurance policies. Certainly you can ose it for mortgage loan processing, putting together a sales proposal or product documentation. Some companies are even using it to distribute software.

But don't believe any vendor that claims its work-flow software can automate *all* your business processes and place them under programmic control. That is a hyperbole: While current offerings may be able to automate all your applications across the board, they probably cannot automate any of them particularly well.

That's because the applications in your business have very different work flows based on, among many other factors, the volume of transactioos involved and the number of people involved in the process.

The differentiating factors are numerous, but in our research, we've found that there are only two key ones that determine the type of application you're working with and, therefore, which kind of product you should select: the complexity of the business process and bow structured or unstructured the business process is.

We believe there are three categories of work flows and three flavors of work-flow software to serve them (see stories this page):

•Production work-flow environments, which are both very structured and very complex.

•Ad-hoc work flows, which are less structured and less complex.

•Administrative processes, which are unstructured and not at all complex.

Each requires different things of a work-flow software product, especially in the development environment, whether it's an easy-to-use graphical user interface-based environment or a document management capability.

Big interest

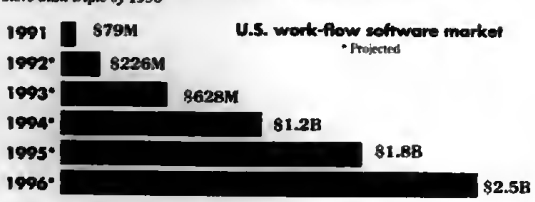
So why the sudden interest in work-flow software? First of all, it is not so sudden: Work-flow software in its current form has been around since 1985.

But it is only more recently that companies have become aware of the business benefits: reduced costs, higher quality and faster service, increased capacity utilization, better use of information, increased management control, organizational flexibility, differentiatioo in the marketplace and work elimination.

In terms that IS can appreciate, work-flow software can reduce the application backlog, minimize user requests for minor application changes and, at the same time, give you a voice in the business of your company. It won't necessarily get IS out of the development process, but it will provide a suitable environment for IS and users to co-develop work-flow applications rapidly. Plus, it will allow the user to maintain the application over time, freeing IS resources for new development efforts. Like any new market, work flow will continue to evolve. But even now, there are a few very good products that are allowing companies to get started implementing right away.•

Uphill flow

Work-flow software will make big gains in popularity, with revenue expected to more than triple by 1996



Source: IDC/Avante Technology

CW Chart: Janell Genovese

Ad-hoc work flow

There are activities within all corporations that defy definition and thereby limit the use of policies and procedures to govern their outcome. Some examples include developing a strategic plan, reviewing a new product design or simply developing a new corporate brochure.

Certainly, all these tasks involve an identifiable group of people, but this is a *project* environment as opposed to a business *process* that continues day in and day out.

Today, most people use spreadsheets, word processors and document managers to complete this type of work. What's missing is an overall method of managing the project. Therefore, in its simplest form, work-flow software in this case adds a layer of coordination over and above the familiar productivity tools.

In its final form, it also provides some discipline in the form of a time — or deadline — factor and a satisfaction or acceptance factor. That way, each individual on the project knows what effect lateness will have on himself and the rest of the team.

These aspects — time and satisfaction factors — are missing in conventional groupware offerings such as **Lotus Development Corp.**'s Notes. However, Lotus does plan to add Action Buttoos and Periodic Macros and improve the formula language, which will make Notes a suitable work-flow platform.

In fact, Notes has a good opportunity to define the ad-hoc work-flow software category.

Bear in mind that workers involved in ad-hoc work flows are normally white collar, and although PCs and local-area networks may be in place, they do not have an extensive information systems structure in many cases.

Add the fact that we are automating a project that may last only a matter of weeks, and one can quickly understand the need for a graphical user interface development environment.

Because the final product in ad-hoc applications is a document, you also need excellent document management capabilities. The software should also be based on a client/server, not a front-end database so that you can replicate the database from one group of people to another.

VITAL STAT

Business process:
Ad hoc, project-oriented.

Development process:
Little IS support.

Environment:
Version control.

Users:
White collar.

Integration:
Desktop interoperability, ability to access foreign databases, host.

Software attributes:
GUI development environment, client/server-based, document management-oriented.

Production procedures

Productioo work-flow software is used in highly structured and complex business processes that are governed by a series of explicit policies and procedures. Examples include mortgage loan processing, insurance underwriting, claims processing and credit-card correspondence.

The established policies and procedures allow the activity to occur in a manner of acceptable business risk and return. There are some other common characteristics:

•There is a financial exposure associated with the transaction; therefore, an audit trail and financial balancing procedures are required.

•The process is often driven by parties external to the organization, such as consumers, in the case of mortgage loans. A paper form is often used as the data collection metaphor — bence the early success of image-related work-flow software in these types of functions.

•Because these applications are complex, you need a robust development environment rather than a GUI-oriented one. Since they will generally be built and maintained by traditional developers, they can require extensive 4GL programming.

For this type of application, look for the following:

•A robust environment that will enable you to determine whether a transaction took place, when it took place and where it stands now.

•Rollback or recovery processes.

•The ability to queue documents on a variety of criteria.

VITAL STAT

Business process:
Highly structured, repetitive, formal.

Development process:
IS involvement is justified.

Environment:
Transaction-based.

Users:
Clerical.

Integration required:
Desktop interoperability, ability to access host.

Software attributes:
Imaging, RDBMS-based, audit trail, financial balancing.

What is and is not

Like re-engineering, work-flow software has its own set of misconceptions and exaggerations

MYTH: Imaging is, by default, part of any work-flow solution.
There is an image component to some applications, but work flows by their very nature do not require images to be present.

MYTH: Work-flow software is merely the process of routing work from one desk to the next.
It actually has much more to do with forms, user interaction and procedural development.

MYTH: One work-flow product can automate all business processes.
Beware the vendor that tells you that its product can automate all business processes. Chances are it can, but it probably will not automate any of them particularly well.

MYTH: Work-flow software does things that are unachievable with conventional languages.
Given enough time and money, C, Cobol and even PL/1 can do exactly the same things as work-flow software. The trouble is, they assume that a process can be reduced to an algorithm, which most business processes cannot.

Source: IDC/Avante Technology

CW Chart: Janell Genovese

Administrative processes

Administrative business processes are normally simple and somewhat unstructured. Examples include expense form processing and travel requests. These may not be killer applications, but they are simple and cheap to automate.

The best software in this case is electronic-mail-based, with no robust database management system environment.

To the traditional E-mail environment, work-flow software adds the following:

- A consistent user interface.
- Application connectivity, assuming the work-flow environment provides a user interface that inherently has some form of data exchange facility.
- Folder management to allow some degree of structure to exist.
- Forms-based routing.

Some vendors claim that E-mail as a base architecture is not the way to go because it's not robust enough. Instead, they will try to sell you a "de-tuned" ad-hoc or, worse yet, production offering.

I strongly believe E-mail is the way to go in this area. For one, it offers a degree of scalability that is not possible in a DBMS-based product. Secondly, administration work flows are simple and can be developed most rapidly using a forms-based environment.



The cost per seat in an E-mail environment should be $300 to $500, which is not feasible with a DBMS-based product.

Finally, using E-mail leverages an existing environment, and the support structure is already there.

Who's who in work flow

Diversity is the name of this game

At last count, there were 26 vendors of existing work-flow software and 53 vendors with products in development. What is striking about these vendors is their widely diverse origins.

Systems vendors

The systems vendors, including **IBM, NCR Corp., Wang Laboratories, Inc.** and **Digital Equipment Corp.**, are beginning to get very serious about this market. Beware the system vendor that is simply content to sell third-party software that runs on its hardware.

Imaging vendors

Many of the image vendors have been early proponents of work-flow software. **FileNet Corp., Plexus Software, Inc.** and companies such as **Sigma Systems, Inc.** have substantial offerings. Beware: Almost all of the imaging companies claim to have work-flow software, but much of that software has only simple routing capabilities.

PC software vendors

Certainly, the PC software vendors will get into this market, including **Lotus Development Corp., Borland International, Inc.** and **Microsoft Corp.** Although Lotus' Notes has many of the elements a work-flow product requires for the ad-hoc area, it has no work-flow capabilities right now, although I believe these will be in a future release. Its early start does give Lotus the opportunity to define this market segment, however. Borland has some exciting development occurring in Paris, while Microsoft will announce an administrative product by year's end. Windows for Workgroups is a good base platform for the ad-hoc area.

You've got to be wary about the PC software vendors, however. They are staging a winner-take-all price war for their traditional products, which makes it tempting for them to intimate a great development in the works for work-flow software to effectively freeze the market. Make sure you know what is real before signing on for anything.

Work-flow-only vendors

There are also companies solely in the business of developing work-flow software. These companies are typically less tied to the underlying hardware, which is key for a companywide implementation. Understand that some of these companies do not sell to users but instead sell their products as the back-end services to third parties, such as **Action Technologies** licensing to **Da Vinci Systems, Inc.** Other work-flow vendors include **Reach Software Corp., Saros Corp., Computron Technologies Corp., Workflow Systems, Inc.** and **Sunrise Software Systems, Inc.**

E-mail vendors

Lastly, the E-mail vendors are seeing the necessity to offer work-flow products. **DEC** has already announced **TeamLinks; Verimation, Inc.** has a deal with Action Technologies; and the next version of **Hewlett-Packard Co.**'s Open Mail will have work-flow facilities.

AND ANOTHER THING...
By the end of 1992, all computer systems suppliers whose products are used in the office will have added a work-flow capability to their products, according to Ovum Ltd., a London-based research company.

Three types of work-flow software

Production	Ad hoc	Administrative
FileNet Corp. Workflo Business System Costa Mesa, Calif.	**Keyfile Corp.** Koala Nashua, N.H.	**Reach Software Corp.** MailMan Alameda, Calif.
Plexus Software, Inc. FloWare Dallas	***Lotus Development Corp.** Notes Cambridge, Mass.	***Action Technologies** (Unreleased) Alameda, Calif.
Sigma Imaging Systems, Inc. RouteBuilder New York	***Action Technologies** (Unreleased) Alameda, Calif.	***Beyond, Inc.** Cambridge, Mass.
Computron Technologies Corp. EPIC Rutherford, N.J.	**Portfolio Technologies** Walnut Creek, Calif.	**Digital Equipment Corp.** Teamlinks Maynard, Mass.
***Microsoft Corp.** (Unreleased) Redmond, Wash.	***Microsoft Corp.** (Unreleased) Redmond, Wash.	***Microsoft Corp.** (Unreleased) Redmond, Wash.
IBM FEF, WAF, Workflow Builder White Plains, N.Y.	***IBM** (Unreleased) White Plains, N.Y.	***IBM** (Unreleased) White Plains, N.Y.
NCR Corp. Process IT Columbus, S.C.	***NCR Corp.** (Unreleased) Dayton, Ohio	***Da Vinci Systems Corp.** (Unreleased) Raleigh, N.C.
Information Management Consultants, Inc. Image Mover Vienna, Va.	***Borland International, Inc.** (Unreleased) Paris	***Verimation, Inc.** (Unreleased) Rockleigh, N.J.
Image Business Systems, Inc. New York, N.Y.		***Hewlett-Packard Co.** Caspian Pinewood, UK
Unisys Corp. Event Manager Blue Bell, Pa.		
Wang Laboratories, Inc. Computron's EPIC, IMC's Image Mover Lowell, Mass.		
ViewStar Corp. Berkeley, Calif.		
Digital Equipment Corp. Echo Holland		

* In development

Source: IDC/Avante Technology

CW Chart: Janell Genovese

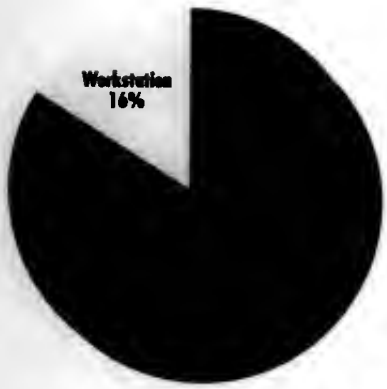
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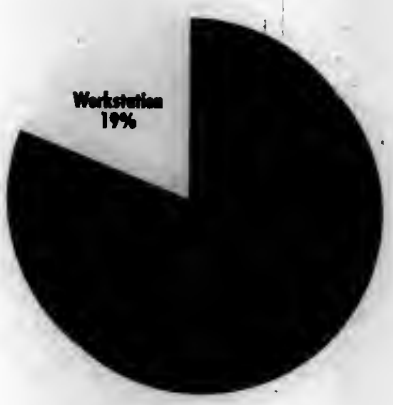
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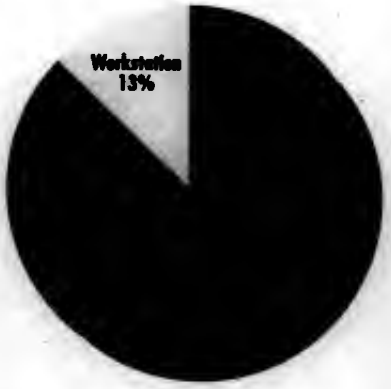
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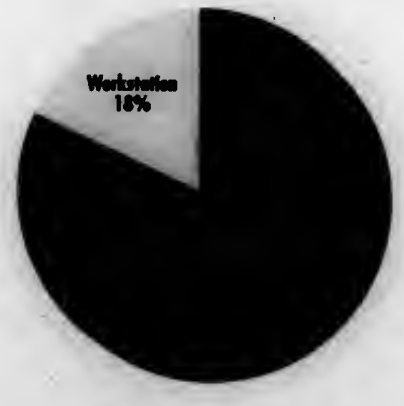
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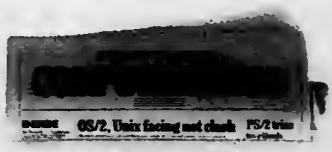
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The Newspaper of IS

Getting started . . .

So where do you start on your work-flow implementation? That depends on what kind of risk you're willing to take. If your company is risk-averse, administrative work flow is the best place to start, especially since the financial investment is relatively minor.

One danger with this approach is that early and relatively easy success in this area could lead to unrealistic time and financial expectations as you move into the more complex activities, such as ad-hoc and production work flow.

Starting with production work-flow software environments will provide the highest level of financial return, but it will also require the greatest change and financial investment. On the bright side, you will learn a great deal that is immediately transferrable to the ad-hoc and administrative areas of your company.

Bear in mind that your choice at this time is likely to depend on which vendor you choose, since no one vendor has a work-flow software product for all three environments. Therefore, adopting work-flow software requires a number of decisions:

- Do you select a best-of-breed vendor for each of the three areas?
- Do you select a vendor based on feature/function capability?
- Do you select a vendor based on hardware platforms supported?
- Do you select a vendor that is committed to having products for all three types of work-flow software environments?
- Is there a need for integration between production work flows, ad-hoc environments and administrative functions? If so, what is an adequate level of integration: file-exchange services or folder-level integration?

The consensus seems to be to get an early win, show management the benefits and then begin to formulate a companywide approach. Trying to answer all the questions up front tends to leave users in a "paralysis by analysis" mode; however, keep these questions in the back of your mind at all times.

SCOTT C. McCREADY

VOICES of EXPERIENCE



"If we buy work-flow software, it will be to distribute updates and releases of software to 20,000 PCs in the company. Our update crews who do installation never stop.

"Reach's product could be the engine for that distribution."

User: *Art Beckman, manager of information technology services, Pacific Gas & Electric Co., San Francisco.*

Possible purchase: *Reach Software Corp.'s MailMan.*



"We were facing the need to invest in microfilm or microfiche technology for storage, disaster recovery and document retrieval. It made sense for us to leapfrog microfilm tech into imaging because imaging provides the benefits associated with work flow, such as simultaneous retrieval of documents by multiple users and improved reporting and inventory tracking.

"It was relatively easy to cost-justify because the company was already committed to buying something, and we showed significant staffing and [photocopying] savings, as well as soft-dollar value savings.

"We will pay off our $1.5 million investment in savings in 2½ years."

User: *Arthur Southam, chief operating officer, CareAmerica Health Plans, Chatsworth, Calif.*

Product selected: *FileNet Corp.'s Workflo Business System.*



"We were consolidating lending and deposits into one location, and work flow let us connect mainframes from across the country in one workstation and do imaging. We can use regular fax machines and send images that appear at other locations as though they were created there. These documents are then automatically routed to the next workstation.

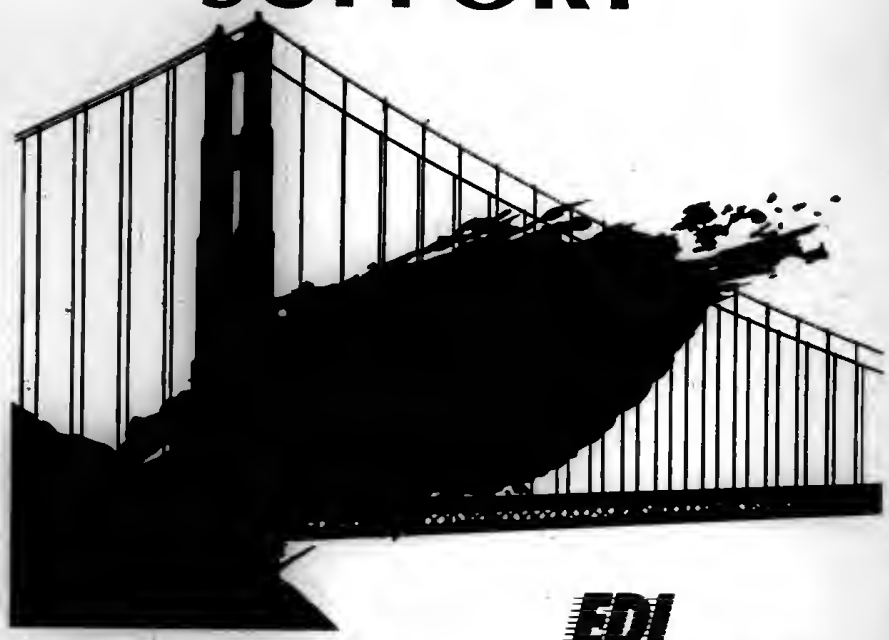
"We can also look at every document that accompanies that image and see how a decision was made. Now you can come to us and get a car loan that used to take all day to process. Now it can be processed in less than an hour and a half."

User: *Allen Cournyer, senior vice president in charge of data center operations, Texas Commerce Bancshares, Houston.*

Product selected: *ViewStar Corp.'s WorkBench.*

Reported by Alice Bredin, a free-lance writer in New York.

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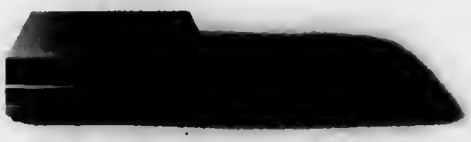
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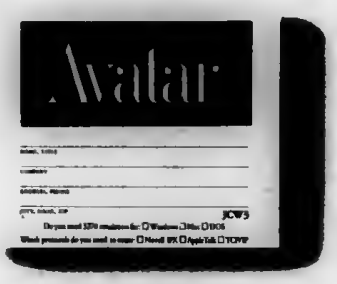
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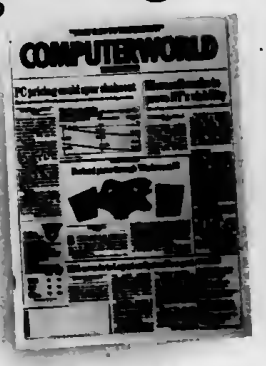
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Randall Enos

the Eureka CREW

Innovation has always been at the heart of the computer industry. On the next couple pages, we'd like to introduce you to the scientists driving the breakthrough thinking in vendor companies. What they're working on today is shaping what you'll buy tomorrow.

Philip M. Neches

NCR

Don't call Philip M. Neches a head-in-the-clouds scientist. NCR Corp.'s senior vice president, chief scientist and executive committee member takes pride in blending his technical know-how with sensitivity to business imperatives. He brought both these skills to bear in 1979, when he founded Pasadena, Calif.-based Teradata Corp. and developed the DBC/1012, a massively parallel database server. Neches joined Dayton, Ohio-based NCR in 1989, and two years later, NCR acquired Teradata. (1991 was a busy year for NCR; it was also the year AT&T acquired the company for $7.5 billion.)

Neches holds bachelor's and master's degrees in engineering from the California Institute of Technology; he returned to Cal Tech and received his Ph.D. in computer science in 1983. For his graduate work, Neches focused on parallel computing architectures and data management and quips that he formed Teradata afterward "because I didn't want to be accused of not implementing my thesis."

CW: Why is head-in-the-clouds research wrong-headed?
PN: Increasingly, your hit rate is low. It's [incumbent] upon us to get out there. And then, when you go back [to the labs], you go back with a much better understanding.

CW: What are you working on now at NCR?
PN: I'm working on the top-of-the-line family of open, microcomputer-based cooperative computing systems.

CW: Will the NCR System 3700 be a massively parallel processor (MPP)?
PN: We're going after the commercial marketplace first, where the major applications are reports and on-line transactions. So we've learned how to push parallelism into the systems software.

CW: What's the benefit of MPP in commercial settings?
PN: If you let a business get its full set of detailed information on-line, it lets people re-engineer key business processes. Companies like AT&T, Wal-Mart, Kmart and Citibank have been doing this with this kind of equipment. But these customers tell us the applications are so critical to the way they run businesses, they don't want to discuss the details.

CW: No details?
PN: Well, Wal-Mart has the most powerful commercial retail system anywhere on the planet. They have something approaching 10,000 VAX MIPS in one system image, using a massively parallel scheme.

CW: What about future research?
PN: One exciting thing resulting from the AT&T/NCR merger is [working closely with Bell Laboratories].

One area that will have immediate impact is compression technology, which is key to bringing multimedia to market. Wireless is another area of collaboration, specifically fundamental technologies for digital wireless technologies.

CW: How are customers faring?
PN: My perception is that customers are way ahead of the vendors. Think about it: The computer business is 30 years old; people who are entering business have been educated on computers. Even people rising to senior positions have lived in the Computer Age.

CW: What's the next step in computing technology?
PN: To handle other forms of information digitally: voice, motion video and so on. The key news is that in the last few years, these applications that have been dreamed about are now technically demonstrable. The next threshold is [making them] cost-effective.

If you look into the 21st century, you see a change from electronic to photonic information systems. When we were graduate students, the hot processor was the Intel Corp. 8080, and the 8085 was just coming out. This was state of the art, with 6,500 transistors [on a chip]. We were asking then about what to do with one million or 10 million transistors ... and here we are.

Interview by Ellis Booker, Midwest bureau chief.



INSIDE

Dave Nagel, Apple

Michael Deering, Sun

Pallab Chatterjee, TI

Drew Major, Novell

Phaedon Avouris, IBM



David C. Nagel
Apple

Dave Nagel is an impatient man. He'd rather invent the future than wait for it to arrive.

As senior vice president at Apple Computer, Inc.'s Advanced Technology Group, he often gets that chance. Apple's 1984 introduction of the Macintosh PC was pivotal in making the PC the ubiquitous item it is today.

Nagel is no stranger to such startling leaps of technology. For 17 years, he served as a research scientist and head of the Aerospace Human Factors Research Division at NASA Ames Research Center in Sunnyvale, Calif. While there, he worked on an early project that explored the concept of virtual reality. His team also did research on computer graphics.

If anyone could follow up the masterstroke of the Macintosh, it's Nagel. His technical schooling is certainly unimpeachable, with undergraduate and graduate degrees in engineering from the University of California at Los Angeles.

Perhaps more importantly, he owns something few other leading scientists do: a Ph.D. in experimental psychology. Nagel knows not only how to build technically complex objects but also how people will approach and use these objects.

CW: What are your chief responsibilities at Apple?
DN: My job is to make sure that the capabilities of our machines are greater than ever, while making them even easier to use. If I'm doing my job right, the user won't even notice our work.

CW: What technologies are you working on to facilitate that?
DN: Mostly research into wireless communications. We've got a project in the works that will provide wireless networking at 10M to 20M bit/sec. data transfer. Soon we'll see the proliferation of mobile products about the size of [a small] tape recorder. The last thing you want is a cable stretching out the back to plug into the wall.

So wireless technology is very important.

CW: How far away is the widespread use of such technology?
DN: I think you will probably see commercial products in the next year or two. It would foster what we call "spontaneous networking." Several users would be able to walk into a room, turn on their PCs and start transferring all sorts of data immediately. Each PC would be able to send and receive the data, eliminating the need for a network administrator.

Another interesting thing about it is the distance we could transfer data: up to 150 feet. That includes going though doors and walls. And the signal wouldn't require much power. Typical operating power would be less than one watt, possibly as low as one-tenth of a watt.

In fact, Motorola and other companies are already beginning to deliver those kinds of products, but they generally are low data-rate products. We are very interested in very high-speed, multimegabits per second kinds of products.

CW: Why high speeds?
DN: One of the trends is multimedia — computing pictures and video and sound and so forth. Those represent a much richer type of information than simple text, which typically is for messaging and cellular data transmission.

So if you're going to be shipping pictures around from one system to another, you don't need 10K bit/sec. capability; you need millioo bit per second kinds of speeds. High speed is where a great deal of promise is.

CW: How has work in handwriting recognition been progressing?
DN: Well, there are problems. Systems that recognize printed characters work pretty well today. The challenge in handwriting is to recognize the sort of handwriting that you are doing, which often is a mixture of printed characters, cursive characters and things that aren't classifiable.

It's not until you get this more general capability that you will throw away your notebook and use one of our systems.

Interview by James Daly, senior West Coast correspondent.

Pallab K. Chatterjee
TI

When Pallab K. Chatterjee came to Texas Instruments, Inc. in Dallas, he had to bridge a language gap. The native of India spoke English well enough, but he had the wrong accent. "They told me I wouldn't make it — I talked funny."

They might have questioned his drawl, but no one ever questioned Chatterjee's ability to think. He brought to TI a bachelor's degree in electronics and communications engineering from India as well as a background in solid-state research and master's and doctorate degrees in electrical engineering from the University of Illinois. He went to Illinois for two reasons: The school guaranteed him a full scholarship, and he could study and work with John Bardeen, a revered scientist who had won the Nobel prize twice — for inventing the transistor and for his work on superconductivity.

The 42-year-old Chatterjee is now a respected name in his own right and has



Michael F. Deering
Sun

The third dimension grabbed Michael F. Deering back in high school, when a Scientific American *article on three-dimensional graphics rendering sparked his interest in computer graphics. He began cranking out programs to generate 3-D images with dial-up access to his high school district's IBM 370 mainframe.*

His first summer job was working on a Digital Equipment Corp. GT40 graphics computer at the Smith-Kettlewell Eye Research Institute in San Francisco. The $5.25-an-hour salary from his part-time programming work there helped pay his way to undergraduate and graduate degrees in computer science at the University of California at Berkeley.

A seven-year hitch in Schlumberger Ltd.'s Palo Alto Research facility in California preceded his arrival at Sun Microsystems Computer Corp. (SMCC) in 1988. Deering, 36, is currently senior staff engineer in Sun's virtual reality group.

CW: Has any of your work ended up as a commercial product?
MD: Yes, but only one was a major product: the GT version of the SPARCstation 2, which is our high-end graphics machine.

CW: What sort of work are you doing at Sun?
MD: Aside from the SPARCstation 2GT and SPARCstation 10GT, I've beeo working oo more sophisticated graphics engines and next-generation graphics languages. I've always been interested in not just pure research but putting things out as products.

In our virtual reality research, we're doing a new system based on the SPARCstation 2GT, where we're using a high-resolution CRT screen and head-tracked LCD stereo shutter glasses to put together a Virtual Holographic Workstation prototype.

CW: What kind of uses do you see for virtual reality technology?
MD: Anything where buman perception of space is needed, like auto design, molecular modeling, animatioo design, architectural design. For anything like that, virtual reality at the right price will sell.

Another area where virtual reality will be large is in entertainment, with companies building theme parks. And virtual reality for training is becoming more attractive, like using flight simulation to train pilots.



CW: What are the business uses for virtual reality technology?
MD: Information visualization. There's already people spending a lot looking at how to use virtual reality to present information on markets in a more fluid form. One example I've seen shows dynamically how the stock market works, with pieces of paper representing stocks floating from above and landing on the floor. When those stocks are bought, the piece of paper gets yanked under the floor.

CW: How does Sun's philosophy about advanced research and development and its business enter into the work you do?
MD: A lot of what I do is flying several years ahead of real products, but that's not to say I don't make emergency customer visits when that's important or help out with trade show demos. With virtual reality in particular, those demos are a very good way to show what our hardware and software is capable of.

CW: Are there still technical hurdles to virtual reality?
MD: Yes. For years, we couldn't draw the images fast enough. That's going better now, but we want to improve it.

Another hurdle is tracking: As you move your head, the rest of the virtual reality universe takes a while to catch up to you. It's like the universe on Quaaludes.

But the biggest remaining hurdle is the display. CRTs are not the best way to represent virtual reality. People want a bigger field of view, so we need lightweight displays that can be worn on the head. This would look like a pair of sunglasses.

CW: What are the research directions for virtual reality at Sun?
MD: I can't comment on some of them, but I can say we've had requests from people who want to put a virtual reality system oo the factory floor, so a nonexpert can pull up a hologram of what the part is supposed to look like.

CW: How does Sun's R&D group relate to the company's business?
MD: The way we are organized, we have Sun Laboratories, Inc. as a group chartered to support all the operating companies within Sun. They have a little longer term charter than some of the advanced development groups, but they're not the only ones chartered with research.

We also have research going on within the operating companies, which have somewhat shorter term charters. I'm actually working with a particular product group within SMCC.

All of this has to do with technology transfer. Sun is conscious of getting ideas to the market as real products.

Interview by Maryfran Johnson, senior editor, workstations.

become vice president of the corporate staff and director of TI's semiconductor process and design center.

CW: What is your role at TI today?
PC: Right now, my role is sort of a coach and cheerleader, and I do philosophy part of the time. I also play another part — you might call it investment banker: I figure out where to invest our money, in what research.

CW: What kind of research are you investing in today?
PC: I can't really talk about that.

CW: Well, hasn't TI said that it licensed the Cyrix Corp. microprocessor to start integrating more functions onto a chip?
PC: We are in a position to start going toward an entire system on one piece of silicon. The integration of microcontroller functions has a lot of possibilities, for example in the auto industry. The BMW 800 series has 68 processors inside it; we're in a position where the automobile is becoming a sophisticated distributed computing environment.

Almost everything is in a digital format. If you look at the design diagram for a computer and for, say, a stereo, there's not a lot of difference there. The underlying technology is blending.

So we see ourselves in the middle of this huge transition. Why think of it as computers equal workstations, and consumer electronics equal playstations? We feel the underlying technology is not going to be much different.

CW: Has any of your research appeared in actual products?
PC: A whole bunch of things I worked on have made it to market, such as specific [dynamic random-access memory], ASICs and so on. Of course, not everything has. As far as a research lab is concerned, if you get 100% of your projects to market, you're not being aggressive enough. If you're batting 70% or 80%, you're probably doing fine.

CW: What kind of projects are you working on now?
PC: Since 1986, we've been looking at the next generation of manufacturing technology. The biggest crisis facing the semiconductor industry is to address manufacturing costs.

In 1984, we spent $100 million on a [chip fabrication plant], and management said, "We're not going to do that again." So they put us on a project to look at what the next generation of manufacturing was going to look like, and we came back and said, "You're right, you're not going to spend $100 million; you'll spend a lot more." And they almost fired the lot of os.

After they calmed down a bit, they said, "Alright, if you're worth your salt, go solve some of this process problem."

We've discovered that 75% of the cost of a fabrication plant is equipment, and there was no reuse of anything; there is very little modularity in the system. So the first thing we went after was modularity, and we've designed a flexible, object-oriented factory system that controls the scheduling process.

We're on schedule to demonstrate a factory working on that principle in January. Where the average factory runs on 35% to 40% utilization, we think we'll get 70% with this system.

Interview by Michael Fitzgerald, senior writer.



Phaedon Avouris

IBM

Phaedon Avouris was supposed to be a physicist but for "a silly mistake": He and a friend got lost on their way to a university physics entrance exam in his native Greece. "I had to settle for chemistry," says Avouris, who received an undergraduate degree in chemistry from the University of Thessaloniki in Greece. He also has a Ph.D. in physical chemistry from Michigan State University.

His mistake was a stroke of luck for IBM. Today, Avouris is manager of the Chemical Physics of Surfaces Group, a branch of materials research at IBM's Thomas J. Watson Research Laboratory in Yorktown Heights, N.Y. The Watson research facility, with more than 2,400 employees, is by far the largest of the five IBM research laboratories.

The soft-spoken 45-year-old received an internal IBM award several years back for inventing new ways of working with a special microscope to create atomic structures. These structures could someday be used to create extremely tiny electronic circuits that are 1,000 times smaller than today's comparable devices. This would allow faster and less expensive computers. The trick is learning how to work with devices that small; this is the area on which Avouris is concentrating.

CW: What kind of work are you doing now?
PA: We're using the scanning-tunneling microscope, which basically has a very sharp tip, to move atoms of silicon around. We can move and remove atoms with a high degree of precision. We're trying to understand how to do this movement — how to break the chemical bonds and the properties of the structures we make with the atoms once they are moved. It's essentially atomic-scale construction.

CW: What's the commercial impact of your work?
PA: IBM's primary interest is nanotechnology: building very small devices, including electronic circuits. These will not be scaled-down versions of the electronic devices of today. The principles will be different, so the devices will have to be as well.

Building any new technology takes time. Once you start building things that small, the properties of materials change dramatically. We have to figure out ways of handling nanodevices and to understand the laws of physics that apply. We're starting to understand these things, to make new structures and study them and then make new devices. But it will take some time.

CW: Were you disappointed that you didn't pursue physics as your field of study?
PA: I don't regret it because it taught me a different mode of thinking. Chemists are a lot more intuitive. They have to be because what they study is very large. Physicists study simple systems, which they analyze qualitatively. In surface chemistry, we think in complex terms. So it prepared me for what I'm doing now. Degrees don't mean much anyway; what counts is what you do in the laboratory.

CW: What attracted you to surface science?
PA: It was a new phenomenon. I read a paper and realized that no one had really looked at how excited states interact with surfaces. It was a whole domain of science that was untouched. A colleague of mine had a tool to help facilitate this, so the two of us paired up and started to look at this. It is still an open field.

Interview by Johanna Ambrosio, senior editor, systems & software.

Drew Major

Novell

When talking about computer technology, Drew Major sounds like the Thoreau of Utah; he is a man focused on making his products "smaller, simpler and faster." As chief scientist at Novell, Inc., Major was part of the three-man team that originally developed the company's NetWare local-area network operating system. A graduate of Brigham Young University with a double major in mathematics and computer science, Major continues to oversee the design and implementation of NetWare.

CW: How did you come up with your original idea for NetWare?
DM: Kyle Powell, Dale Neibauer and I had been doing some consulting work while still in college and kept on after we graduated. In October 1981, a local company called Novell Data Systems hired os to come in and hack CPM so a hard disk could be shared by many users. Our deadline was Comdex — six weeks away!



[Disk sharing technology] was considered bot at the time. Other companies that were doing it were partitioning the hard disk into a number of assigned floppies. We figured that was the easy way to do it, but it was the wrong way.

We thought coming at the problem at a higher level, specifically file sharing rather than disk sharing, would be faster and more efficient.

That wasn't what Novell Data Systems wanted us to do, of course, so we worked on hard disk sharing for them and continued to work on file sharing on our own time.

Our basic concept was, instead of having lots of people time-sharing on one big machine, let's connect lots of little machines and turn them into a system. As soon as we saw the IBM PC, we knew they were the machines we should be linking up.

CW: What are you currently developing?
DM: I spend a lot of time thinking about where NetWare needs to go — specifically, the fully distributed, object-oriented file system.

I'm always trying to make things smaller, simpler, faster — with every revision of NetWare, our core operating system usually gets smaller.

CW: How do you go about tackling tough problems?
DM: Most great solutions are simple and blindingly obvious. Look for the simple way first.

But tough problems like how to do the software for the server-mirroring that we have in our new System Fault Tolerant III product — we worried at that thing for a long time without getting anywhere.

So in 1986, Dale, Kyle and I decided to drive to Las Vegas rather than fly and see if we could talk the thing out during the eight-hour drive. And we did.

Suddenly, somebody said, "Hey, what if we…?" We worked it out on the drive, and the problems just fell away.

CW: How do you envision the networks of the future?
DM: First, we're going to have a global system based on logical, not physical attributes. The software will be much smarter than it is now; it will remember what servers you need, what applications you use, what data you access, then automatically go get the resources and bring them to you wherever you happen to be.

Next, I expect to see fully distributed processing across clients and servers — the "network as system" paradigm. To do that, we're going to need a lot of work done in heuristics, so the system can anticipate growth and change and be scalable. The network is just going to have to get a lot smarter.

Interview by Michele Dostert, West Coast correspondent.

These interviews with leading computer scientists kick off a new series appearing in the Advanced Technology section. Our reporters will on occasion talk with top researchers about their leading-edge work and what their discoveries mean for your business. Look for our Nov. 9 interview with Ravi Sethi, director of the Computing Science Research Center at AT&T Bell Laboratories.

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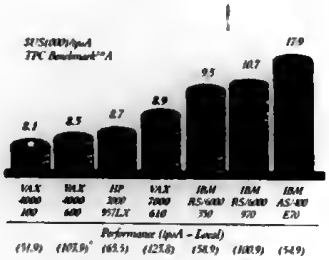
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Riding the Software Pricing SKYROCKET

IS heads are dizzy from astronomical software costs. Fed-up companies are climbing off, uniting — and saving money.



Kellie McGrail

BY G. BERTON LATAMORE and JOSEPH MAGLITTA

There are days when Darrell Ackmann, like thousands around the country, must wonder if a software license hasn't become a license to steal. "A general-ledger package may cost $300,000, and you could spend $3 million implementing it without blinking," says Ackmann, manager of contracts at Motorola, Inc. in Schaumburg, Ill. Increasingly, angry companies are rallying to force a tier-drop that will lower the heartbreaking cost of buying, installing and maintaining software, especially for larger systems and local-area networks.

Although hardware prices have nose-dived in recent years, software costs have risen rapidly. In fact, runaway software spending now represents *the* major budgetary headache for many information systems organizations, most of which are under knuckle-whitening scrutiny from chief executive officers eager to see payoffs from huge technology investments.

Add maintenance fees and "nuisance" charges such as transfer fees (often levied when software is moved from one system to another), and the pain worsens. While suffering and frustration are widespread, IS managers are starting to fight back in the $38 billion software industry:

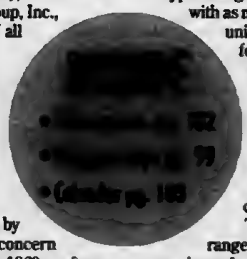
•Earlier this month, the Society for Information Management (SIM) announced it was making software pricing reform a top priority (see story page 102). In a recent survey, nearly 100% of SIM's membership polled said battling high software costs was crucial.

•Another coalition of 80 large corporate computer users has been meeting two or three times a year to discuss software issues. The SoftWare Asset Management Interest group (SWAMI), which comprises large clients of Gartner Group, Inc., claims to represent 10% to 15% of all U.S. software dollars spent.

•Two weeks ago, a Texas-based organization of leading IS executives lauded Digital Equipment Corp.'s new software-licensing policies. The Profit-Oriented Systems Planning Program gave DEC the first "vendor honor roll" award in its 25-year history.

These groups, as well as efforts by individual companies, reflect the concern and anger many feel over having 1960s software pricing policies drag into the 1990s.

"Too often, tiered pricing has little relationship to the real value of the software to the user," Ackmann complains. "For instance, we are down to two or three users on one VM application. When we upgraded the system it was running on, the vendor wanted more money. But our use of that application had not changed."



Old approach, new problems

How did software become such a dollar-munching monster? Experts say several reasons underlie the problem.

For starters, each software vendor has its own tier definitions and schedule of charges. Because the typical large information systems group works with as many as 100 suppliers — each with a unique tier schedule — it is impossible for users to track and predict many of the charges. Thus, many data centers are often surprised by unexpected tier-upgrade fees.

Years of neglect when software was inexpensive and hardware was the focus of information technology management has complicated the situation in many shops.

The burgeoning growth of mid-range servers and PCs, each with its own expensive software and unique asset-management challenges, has only worsened the problem.

Tiered pricing, never intended for a nonmainframe world, simply does not adequately cover client/server and other new computing models. The reason is simple: In these new approaches, comput-

Continued on page 100

Riding the software pricing skyrocket

CONTINUED FROM PAGE 99

ing loads and some applications may shift from one system to another across the enterprise network.

All these factors add up to a major nightmare for IS. In fact, the problem has become so severe that some organizations are postponing hardware upgrades simply because of the high cost of associated software charges.

But Len Charney, who runs the data center at ISM Information Systems Management, a $370 million outsourcing firm in Winnipeg, Manitoba, notes a more serious consequence.

"[Software] costs have become so high that they, rather than technology or business needs, are driving the information technology industry," he says. "There are good, useful technologies out there that will never be used because of costs."

Vendors seem to hear the rumblings. Computer Associates International, Inc. last April instituted new pricing policies, marking a clear shift away from the traditional tiered model. The idea seems to be catching on: In mid-October, Citicorp and CA announced a flat-fee, enterprisewide software pact that analysts say could reshape industry licensing policies [CW, Oct. 19]. Other vendors, notably DEC, also have been active in this area.

While reforms evolve, many IS managers are taking matters into their own hands. They are using a variety of tactics, from simple bargaining with vendors to complex software asset management programs, to cut costs.

"We recommend that users adopt a four-point, bare-bones plan to gain control of software costs during this time of chaos in pricing," says Bill McNee, a program director at Gartner Group who heads up the consultancy's software asset management business as well as SWAMI.

Following are brief accounts of successful approaches used by several companies to tackle the problem.

Software asset management

The practice of "software asset management" is emerging as a favored tactic. Basically, this involves doing a systematic, ongoing review of a corporation's entire software portfolio.

"Often software prices creep up over the years," says Dick Pasman, an administrator at The Upjohn Co.'s administrative computing center in Kalamazoo, Mich. "Without a thorough audit, those increases often go unnoticed until the user is paying much more than the software is worth to that user's operation."

Audits also can uncover redundant software, underused systems or different versions of the same software running on various systems throughout the enterprise.

Possible cost savings

Proponents say that moving all users to the latest version also lets IS consolidate operations, eliminating redundant software while improving service.

The approach seems to work. Upjohn, to name one, says it will save about 10% of its data center budget this year through careful management of software assets, Pasman says.

"We put together a set of spreadsheets, using Lotus' 1-2-3 on a PC, that let us look at our entire mainframe software inventory at any given point in time," he explains. "When we checked our inventory over, we realized that we could consolidate our 300E and 3084QX onto a single 600E that is still a Group 40 system and eliminate a great deal of redundant software."

Today, Pasman estimates the company is saving "a minimum of $450,000" on IBM software and $150,000 on third-party products. "And," he adds proudly, "we bought the 600E used at a good price. The payback will take less than a year."

But the company isn't quitting there. Upjohn has spotted another potential saving in changing IMS monitors from one costing $40,000 a year to a new one priced at $13,600.

Similar cost-savings programs are yielding impressive results elsewhere.

Price caps at Petro-Canada

Petro-Canada in Calgary, Alberta, began its inventory efforts after realizing that maintenance prices were out of hand, says Joan Gallaway, a company specialist in software management.

"Invoices that grew by more than 10% annually sparked talks with vendors to discover why the costs were rising so quickly," he explains.

Then, Petro-Canada negotiated maintenance price caps for many legacy software products, as well as for new purchase agreements. The company also cooducted a thorough software audit as part of a data center consolidation, which Gallaway says eliminated about 15% of its inveotory over a period of 18 months.

Centralize purchasing

Another winning tactic, according to IS managers and consultants, is to consolidate all of an organization's software dealings into a single team.

"Centralize negotiations of all terms and conditions with software vendors," says Randy Prickett, vice president at Systemantics Information Services, Inc. in Little Rock, Ark., a large outsourcing company.

"Pick a standard product and stick with it across data centers. That lets you standardize training, terms and conditions and gets you volume discounts from vendors."

Savvy IS managers onte that software vendors are more likely to offer incentives if they know the team making the initial deal is likely to buy more products for the whole corporatioo over time.

"We have reaped incredible dividends by putting things like transferability, which lets us transfer software to a new site during data center consolidations, and multiple-client clauses in our contracts," Prickett says.

Physical condition a key

Experienced bands add that it's an excellent idea to keep good physical software cootract files. Once old contracts are lost, they warn, IS is vulnerable to vendors who might try to reinterpret or change contracts — particularly after the original supplier has been bought out by another firm.

"Just having someooe on your staff who pays attention to software management issues is half the battle," Prickett concludes. "Once your company decides to enforce ceotralized software, you are 80% there."

Tracking software — hard enough on the mainframe — is regarded by many shops as impossible in the huge population of desktop systems.

Yet Mike Starke, the manager responsible for PC software at US West Communicatioos in Bellevue, Wash., has devised a method to make the assignment a bit more manageable.

"We work off an approved list of vendors and products endorsed by our advanced technology people," he explains. "Since we record everything that we purchase in a database, we know what we have."

Not every product is tracked, but those that are get handled by a vendor contracted for the chore. "We have the best of both worlds," he says. "The distributor and software publisher are satisfied that the application is being used according to the agreement. And we do not have to maintain a large staff just to keep track of it."

Denver-based US West has direct relationships with publishers of its standard software but buys through distributors, in part to get local support.

The firm also was one of the first buyers to negotiate a "master disk" arrangement, which lets distributors make copies of software for the company as the need arises. Documentatioo is supplied under a separate process. "We find that on average we need one set of documentation for every 20 licenses," Starke says.

The overall result, Starke says, is an orderly arrangemeot that is far preferable to maintaining a warehouse full of unopened boxes of software bought in anticipation of expected demand.

Get close to your vendor

Now that traditional pricing models are breaking down, experts say it is more important than ever to pick the right software vendor and work closely with it. The reasoo?

You might be able to have a bigger impact on future pricing policies than you imagine.

New technologies such as Network License Manager and other technical licensing software packages have begun to enter the market.

Thus, suppliers are looking for new ways to price software, giving IS a unique chance to work with them in creating oew pricing models.

Making friends beneficial

Forging close relationships with strategic vendors can be rewarding in several ways, says Richard L. Johnson, financial analyst in the Software Asset Management Group at Phillips Petroleum Co. in Bartlesville, Okla.

Johnson created the software asset management function at Phillips seven years ago, making him one of the most experienced people in this area today.

"By partnering with strategic vendors, we can get a better sense of the direction of the technologies and pick those that match direction," he says.

Once such relationships are established, Johnson continues, contract time periods for all software from a vendor can be made "co-terminous," creating less administrative cost for both user and vendor.

"I can renew all our software from a particular vendor at one time," he explains. "It all comes on one invoice to one address and is processed once. The vendors seem to like that better because they have a central contact for all contractual questions. They pass some of their savings in administration back to us."

Bargaining

Finally, IS managers say not to underestimate what a little old-fashioned wrestling with vendors can accomplish.

At ISM, for example, Charney successfully bargained with software vendors during a recent systems expansion.

"We upgraded from our IBM ES/9000 Model 620 to the 720 when we moved a customer's computer operations off their systems ooto ours," he explains. "The vendors were willing to listen to my argument that since the partition under which their software ran was no larger than the 620 and served the same population of users, we should not have to pay a tier upgrade charge."

The result? An estimated savings of $643,000.

But there's more. By talking another vendor out of charging both a transfer fee and two tier upgrades, and by prepaying maintenance fees on five products, ISM also staved off other fees totaling $93,000. Other miscellaneous deals, Charney says, brought total savings to nearly $800,000.

At Motorola, Ackmann adds that it's important to look beyond purchase costs when negotiating contracts.

"We try to look at the total cost of using something, not just the license fee," he says. "People try to get the price down and forget that they can probably get a lot of free help from the vendor in implementing the package — and get the savings in cost back twentyfold."

Latamore is a free-lance writer and laptop publisher based in Burlington, Vt. Magiitta is a senior editor, management.

Fare's fair

Software pricing schemes based on number of users and type of CPU were judged to be fairest by 1,245 worldwide sites

	Fairest	Neutral	Least fair		Fairest	Neutral	Least fair
Based on users	34%	51%	15%	Based on operating system	21%	56%	23%
Based on CPU	31%	43%	26%	Single-level	20%	21%	59%
Usage metering	25%	61%	14%	Based on tiered pricing	11%	73%	16%

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Top IS execs: The price ain't right

BY NELL MARGOLIS
CW STAFF

Urged by the lion's share of its information systems leader membership, the Society for Information Management (SIM) is poised to take a public position on the issue of software pricing. The Chicago-based professional organization plans to bring IS managers and software vendors together on — and hopefully beyond — the incendiary issue in a major position paper, according to SIM publicity chairman Alan Singer.

The formal paper is the first in a series that the 2,500-member group is contemplating in its quest for clout as the collective voice of U.S.-based IS heads. It is planned for release in April, said Singer, senior vice president and worldwide director of information technology at Burson Marsteller.

Last month, SIM formally solicited input from some 100 software vendors, including market leaders such as Legent Corp., Dun & Bradstreet Software, Microsoft Corp. and Computer Associates International, Inc., according to Singer.

That call came in the wake of results of a SIM membership survey in which 94% of the approximately 800 respondents targeted software pricing as an issue for which they want their representative organization to go to bat.

Software licensing for local-area networks was ranked as the highest concern, followed by client/servers and mainframes, as well as midrange computers.

"Darned right it's on my mind — just about every day," one industrial IS member who requested anonymity said at SIM's annual conference last week.

Recession-tightened budgetary constraints and rapidly changing computing paradigms, he said, have joined to make traditional tiered pricing unpalatable to many user companies, his own included.

"But what really brought it home to me," he said, "is all the mergers and acquisitions in the software industry. Realistically, we're left with very few places to turn."

Believe it when I see it

Signs that controversial software giant CA is backing away from reputedly rigid tiered pricing and could even emerge as a role model of customer-tailored license pricing arrangements offered the IS director scant comfort.

"We are a big CA shop, and we have yet to see that flexibility," he said. "We'll believe it if we hear it in our next negotiations with them."

In the meantime, he applauded SIM's move to enter the fray, which he said he voted for in the survey.

Respondents tagged three issues as musts for the position paper to address: tying cost to type of use, controlling increasing maintenance costs and providing the flexibility to move licensed software to a different platform.

The latter has proved a particular bone of contention in outsourcing situations.

Bill Zeitz, SIM software licensing task force co-chairman, said that wish list will be heeded — and with both sides engaged in the debate.

"Developing fair and equitable software licensing methodology is a critical cost factor to many corporations," said Zeitz, who is also director of the IS agricultural group at Wayne, N.J.-based American Cyanamid Co.

"Establishing a good working relationship with vendors is key to success on both sides."



➤**The SoftWare Asset Management Interest Group.** Contact via Gartner Group, Inc. (203) 964-0096.

➤**Open Users Recommended Solutions.** A coalition of vendors and users. Contact Lee Bickmann (203) 325-4528.

➤**Society for Information Management.** International group of high-level IS officials. Contact Dave Laurenzo (312) 644-6610.

➤**The Profit-Oriented Systems Planning Program.** A worldwide organization of information technology executives. Contact Ellen Snoyer (214) 965-1846.

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Feds debate handling of failing IS projects

WASHINGTON, D.C. —When an information systems development project starts to veer off track and is headed for disaster, should management try to steer it back on track or slam on the brakes?

That is the classic management question being debated in the nation's capital after the U.S. General Accounting Office (GAO) criticized a federal agency for failing to hit the brakes. The target was the U.S. Department of Health and Human Services (HHS), which provides oversight and 90% of the funding for the development of child-support enforcement systems in the 50 states [CW, Dec. 2, 1991]. In a recent audit, GAO investigators complained that the development of three "severely flawed" state systems continued for a period ranging from three to eight years, at a total cost of more than $32 million in federal funds, before the projects were stopped and redirected.

Rather than ordering the states to stop and take corrective action when the problems were first identified, HHS officials informed the states of the deficiencies and then continued to fund the systems based on the states' assurances that the problems would be addressed, the GAO report said. The GAO auditors suggested that funding of the three problem-plagued systems should have been suspended until they were fixed. Eventually, the systems had to be scrapped, and the states started over.

However, HHS officials firmly disagreed with the GAO's conclusion. Jo Anne B. Barnhart , assistant HHS secretary for children and families, said HHS prefers a "more constructive" and cooperative approach that emphasizes technical assistance to help states fix their problems. In a few cases, HHS has "judiciously" used its authority to suspend state projects, she said.

Rather than merely accepting state assurances of better days to come, the GAO argued, federal officials must act more decisively. The question remains, however, of how to decide whether an IS project needs a trip to the repair garage or a trip to the junkyard.

MITCH BETTS

CALENDAR

NOV. 15-21

Guide's 1992 Conference. Atlanta, Nov. 15-20 — Contact: Guide International Corp., Chicago, Ill. (312) 644-6610.

Information Industry Association 1992 Annual Conference: Knocking Down Info Walls. San Francisco, Nov. 15-19 — Contact: Information Industry Association, Washington, D.C. (202) 639-8262.

Troubleshooting, Maintaining, Upgrading PCs Seminar. Fort Lauderdale, Fla., Nov. 16-17 — Contact: Quest, Spotswood, N.J. (908) 251-3217.

International Security Systems Symposium and Exhibition. Washington, D.C., Nov. 16-18 — Contact: Krause & Associates, Bethesda, Md. (301) 986-7800.

19th Annual Computer Security Conference and Exhibition. Chicago, Nov. 16-18 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2200.

C++ World Users Conference. Secaucus, N.J., Nov. 16-20 — Contact: C++ World, New York, N.Y. (212) 274-9135.

Comdex/Fall '92. Las Vegas, Nov 16-20 — Contact: Comdex/Fall, The Interface Group, Needham, Mass. (617) 449-6600.

ISDN/Broadband '92. Reston, Va., Nov. 16-20 — Contact: Information Gatekeepers, Inc., Boston, Mass. (617) 232-3111.

Transaction Processing Networks Conference. Washington, D.C., Nov. 17-18 — Contact: Telecommunications Reports, Conference Department, Washington, D.C. (202) 842-0520.

The International Computer Training Association. Orlando, Fla., Nov. 17-19 — Contact: International Computer Training Association, New York, N.Y. (212) 395-9049.

Comforum. Orlando, Fla., Nov. 19-20 — Contact: Comforum, Chicago, Illinois (312) 938-3500.

NOV. 22-28

Openforum '92. Utrecht, The Netherlands, Nov. 23-27 — Contact: Uniforum., Santa Clara, Calif. (408) 986-8840.

NOV. 29-DEC. 5

Technical Marketing 2000: Opportunities and Strategies for a Changing World. Washington, D.C., Nov. 30-Dec. 1 — Contact: Technical Marketing Society of America, Torrance, Calif. (310) 534-3922.

European Conference on Hypertext '92. Milan, Italy. Nov. 30-Dec. 4 — Contact: Association for Computing Machinery, New York, N.Y., (212) 869-7440.

Cause '92. Dallas, Dec. 1-4 — Contact: Cause, Boulder, Colo. (303) 449-4430.

The Open O/S Conference. San Francisco, Dec. 2-3 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

EO/IR Sensors Seminar. Orlando, Dec. 2-4 — Contact: Advanced Technology International, Dept. EO/IR, Washington, D.C. (202) 223-8840.

Corporate Information Management Conference (CIM). San Diego, Dec. 3 — Contact: Susan Miguel, IMS, Tiverton, R.I. (401) 683-5760.

Environmental Marketing and Contracting Conference. Washington, D.C., Dec. 3-4 — Contact: Technical Marketing Society of America, Torrance, Calif. (310) 534-3922.

14th ACM Symposium on Operating Systems Principles. Asheville, N.C., Dec. 5-8 — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440.

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Improving Employee Performance Using Technology. New York, Dec. 2-4 — Contact: BIS Strategic Decisions, Norwell, Mass. (617) 982-9500.

The Migration to Client/Server Computing. Dallas, Dec. 3 — Contact: Informart, Dallas, Texas (214) 746-3500.

DEC. 6-DEC. 12

Software Support '92. Monterey, Calif., Dec. 6-9 — Contact: United Publications, Inc., Yarmouth, Maine (207) 846-0600

Supporting and Troubleshooting Windows 3.1 Seminar. Seattle, Dec. 7-8 — Contact: Data-Tech Institute, Clifton, N.J. (201) 478-5400.

Wireless Datacom '92 Exposition and Conference. Boston, Dec. 7-9 —Contact: Communication Events, Norwalk, Conn. (203) 847-5131.

Computer Measurement Group (CMG) '92. Reno, Nev., Dec. 7-11 — Contact: CMG '92, Department 77-5105, Chicago, Ill. (312) 527-6652.

Image World Atlanta. Atlanta, Dec. 7-11 — Contact: Benita Roumans, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

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With global competitive pressures forcing businesses everywhere to streamline decision-making, accelerate product development and improve customer service, organizing people to work as a team has taken on new urgency. In the 1980s, the individual reigned. In the ultra-competitive '90s, it's the workgroup that matters most. How will individuals in these groups establish rapport? How can they overcome time and distance? How can the group's collective expertise be leveraged to maximum effect?

Lotus® Development Corporation recognized this trend while it was in the making and eight years ago set out to develop workgroup software that would deliver on the promise of networking. The result, nearing its third generation, is Lotus Notes.® It defines workgroup computing and there's nothing else like it.

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A comprehensive system for the business of workgroups.

Notes is an environment for developing applications which enable groups of people to work together more effectively. Notes is unique. It specifically addresses a class of high-impact business applications which, prior to Notes, were impractical to build. Notes helps professionals execute business processes, such as sales, service and product launches, more effectively—in essence, increasing responsiveness by helping them manage documents: the natural currency of business information.

Notes includes fifty ready-to-use group applications such as project tracking, account management, electronic mail and group conferencing that can be customized or augmented by new applications. Anyone can learn to create a Notes application—without depending on scarce professional development resources.

Notes workgroup applications also provide a ready vehicle for workgroups to communicate via "electronic meetings" or forums that allow all involved to participate regardless of schedules or locations. Going beyond familiar point-to-point e-mail, Notes' multi-platform, server-based environment provides data-based communications and excellent scalability.

Only Notes addresses workgroup computing comprehensively, with an extensive inventory of ready-to-use applications, as well as provisions for high security and remote dial-in. In use since 1989, Notes defines the standard for workgroup computing in hundreds of organizations the world over.

Notes is integrated. Its competitors are patchworks.

Recently, Microsoft® Corporation announced its plans to enhance the Windows® operating system with Windows for Workgroups. We're glad to see another major software vendor follow our lead in serving workgroup needs. But in promoting their announcement, Microsoft presented Windows for Workgroups as an equal to Notes. The facts don't support this claim.

"More than any one technology, the value of Notes is in how it is all presented. Simply mail-enabling a bunch of applications will not equal Notes."[1]

Stuart Bloom, Vice President, Distributed Systems Solutions

Specifically, Microsoft claimed that Windows for Workgroups in combination with their database

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, Lotus Notes has no peer.

query tool, Access, and their rudimentary development environment, Visual Basic, comprise a functional equivalent to Notes. There is no comparison. Lotus Notes is optimized to handle the vast amount of commonly unstructured information that's normally buried in business forms, proposals and procedures. And its unique "replicated object store" technology slashes the system overhead for sharing that information. Notes is substantially more ambitious than simple send/receive messaging. Microsoft simply has no equivalent.

Microsoft has touted Access, its database query product, as a peer to Notes' data query facilities. However, Microsoft suggests that Visual Basic be used as an adjunct. The fact is, Access with Windows for Workgroups and Visual Basic will provide only a fraction of Notes' workgroup capabilities, in a far more complex and less maintainable package.

An open path to existing applications.

Notes offers buyers of strategic computing resources a fully integrated, proven system that removes barriers to efficient workgroup practices and breaks down obstacles to rapid development of document-based applications. And it does so across multiple platforms, while supporting important established standards.

Of course, professional developers will wonder: How is this compatible? Will I have to scrap my existing applications? Will software conflicts bog me down? Notes is unique, but its open characteristics are congenial to what you've got in place. Notes fully leverages native inter-application data exchange facilities like DDE, OLE, Publish & Subscribe or ToolTalk. Notes' malleability, friendliness to existing systems and Lotus' strong commitment to publish APIs combine to make Notes the open workgroup solution.

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Eight years in the making, Notes is delivering startling results for our customers. Recent research measured a remarkable 400% average ROI for Notes sites studied.[2] With Notes, you'll be implementing a complete and peerless workgroup support system, that makes custom applications accessible to anyone. By comparison, patchwork technologies from Microsoft and others will saddle you with the overhead of a professional development staff. You'll be hamstrung like workgroups everywhere who are dependent on overloaded Cobol, C and xBASE programmers for every needed application.

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Want to succeed? Get out of IS for a while

Summit IS VP Gerry Long says you can't really understand applications until you have to use them

Want to know how to go far in information systems? Meet Gerry Long, vice president of Summit Information Systems, the IS subsidiary of Roadway Express, and a 1993 winner of a Society for Information Management Partners in Leadership award (for successful collaboration between a chief information officer and a chief executive officer). Long has some strong ideas about what IS professionals need to do to build successful careers and make a real difference in their companies. He recently spoke with Computerworld *assistant researcher Stefanie McCann about the future of careers in the computer industry.*

Q What kinds of IS people do companies need? What will their needs be?

A What we are looking for are bright folks who really have a focus on the customer. Ooe type of person we don't need is someone who is focused ou the technology and thinks of himself as strictly an IS professional.

Q You didn't even think you'd be in this field 10 years ago, did you? Hadn't you moved away from IS, after starting out there?

A Yes. Ten years ago, I thought my career was in manufacturing and my goal was to be a plant manager. I changed because the company I was with was downsizing manufacturing efforts. In 1983, they basically went through the company and took everyone that could spell computer without a K and put us on that project team. Within the next couple of years, I was running the systems organization.

Q So how did you get into IS to begin with?

A In 1963, everyone took computer aptitude tests, and if you looked like you were able to become a programmer, then you were sent to programming school. Pan Am, where I worked at the time, gave those tests to everyone.

Programming back then was a high-demand but very low-availability skill. People were trained, and you would generally stay with a company for a while and move on because you got your training. Then you went out and tried to leverage that into a bigger job.

I passed the aptitude test, so that's how I got into programming.

Those days don't exist anymore; it's a lot tougher for people getting out of school now.

Q You didn't like programming very much, though, did you?

A I found out very quickly that I wasn't very good at it. I did enjoy the business analysis part and the business management part.

Q What key skills do IS professionals need now? In the future?

A Basic business analysis and interpersonal skills are needed now — desperately. In the future, we need to enhance those basic skills with cross-functional understanding of business functions. If your background has been in IS and accounting functions, you are able to sit down with the transportation department and understand where logistics fit in and what kind of impact the accounting function may have on logistics — so you can start to see where the opportunity for improvement across the functions will be.

Q How did you go about gaining cross-functional perspective?

A I spent eight years as a materials manager. I was the user of computer systems, rather than a developer. That gave me a very different perspective on what role IS ought to be playing.

Q Where do you see the future of programmers?

A I think programmers will be around a lot longer than many people think. As long as I have been in this business, I've heard people talk about eliminating programming as a function. I don't see that happening. I think there is going to be a continual need for the human/machine interface, and that role will be filled by programmers. I do expect that they'll become less technically oriented and perhaps become more dispersed out in the business functions.



Gerry Long: *'Basic business analysis and interpersonal skills are needed now — desperately'*

Q What kind of advice could you offer to people wanting to climb the IS ladder?

A Learn the business — whichever function you have the most interest in other than information technology. You assume people in IS who have selected it already like the technology piece and are going to learn that part, but they need to select another part of the business and to learn to support it.

If they like the financial arena rather than just understanding what it takes to put together general-ledger programs or cash-management programs, they ought to understand the theories of cash flow, cash management, what the difference is between finance and accounting and where auditors are looking for data.

Q Doesn't developing an application teach you as much as you really need to know about the business function?

A Not really. Right after completing a new inventory control system, I was named manager of inventory control. That is a very sobering event for someone in systems; I had to run a system that I developed and designed. You find out where your weak spots are. It was an excellent learning experience.

Q What pitfalls would you say IS professionals should avoid?

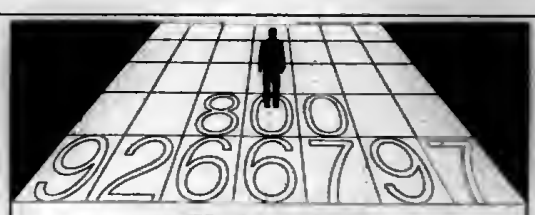
A Avoid a narrow, bigoted adherence to a particular technology. Bigoted is a strong word, but you find people who are distributed systems bigots, or microcomputer bigots, whose minds are closed to all other possibilities. These people generally don't get too far.

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INDUSTRY CURRENTS

Client/server, integration skills Rx for success in health care

BY EMILY LEINFUSS
SPECIAL TO CW

Some information systems professionals in the health-care field are having the plug pulled on their careers, but those with up-to-date skills are getting a healthy shot in the arm.

"There are the same number of jobs available, but companies are laying off people with old skill sets and hiring new ones," says Suzanne Fairlie, president of Pro-Search, Inc., an IS recruitment firm in the Philadelphia area.

IS managers say they want people who can take mainframes, PCs, image processing and voice response systems and integrate them into one system, Fairlie says.

Diversity is key

This push for integrating departmental islands calls for a diverse set of skills. Requirements range from the business analysis, liaison and data modeling abilities that Fairlie emphasizes to the PC local-area network and client/server know-how that John Cooper, director of data processing at Hillcrest Medical Center in Tulsa, Okla., says is essential.

J. Peter Thielen, manager of systems and programming at the University of Minnesota Hospitals, says he needs people with networking experience. "Health-care administrators are starting to understand the value of having a medical chart on-line so health-care practitioners, medical records people, billing people and private doctors' offices can simultaneously have access to it," he says.

Hospitals, health-maintenance organizations (HMO) and home-care providers are using technology to improve the loop between providers and insurers by developing systems that can simultaneously access on-line patient information. This improves patient care because it results in speedier access to more accurate information. It also enables claims to be processed faster and more efficiently.

Home-care providers offer the best IS opportunities in the health-care industry. Although they represent a much smaller market overall than HMOs and hospitals, these companies are expanding their systems development efforts and are actively seeking to fill IS positions.

Until now, "home-care companies have not invested much in systems. As a result, we seem to be climbing the curve as our company starts to invest more heavily in systems development," says Jim McCloud, IS director at Homedco, Inc., a home-care provider in Fountain Valley, Calif.

Allan Crommett, director of MIS at home-care provider Care Enterprises, Inc. in Tustin, Calif., is also looking to fill IS slots.

But Crommett stresses the human side of the job. "All things being equal in technical skills, we will take someone with less experience but more enthusiasm for dealing with people," he says.

All the right skills

Fairlie recently placed three people in senior positions in health care. Their backgrounds illustrate the industry's needs. One had a very strong financial systems development background. Another had materials management savvy that could translate well to hospital materials management, and the third knew integrated systems.



The story is slightly different for HMOs than hospitals because hospitals had a head start in developing crucial systems. HMOs are trying to catch up and therefore have more development work to accomplish, says David Hamilton, director of applications at Harvard Community Health Plan in Boston.

"We are hiring programmer/analysts and project managers, and they are either in traditional mainframe Cobol arenas or in relational database areas," Hamilton says.

HMOs are also beginning to develop clinical information systems.

"As an industry, we have not done a lot in terms of clinical information systems, and there is not much offered by vendors. That makes a lot of opportunity, either with vendors of health-care systems or the HMO directly, to develop those systems," says Bill Reed, senior vice president of operations at Geisinger Systems Services in Danville, Pa.

A person with a health-care background will go far in this industry, even in systems development. Knowledge of health care is even more important than knowledge of new technologies, according to Reed.

He says it's easier to teach a nurse to be a systems analyst than to instruct systems analysts on everything they need to know about nursing.

However, Reed says, taking a course in hospital administration, any clinical specialty or attending industry-specific conferences can help IS professionals break into the health-care industry.

Leinfuss is a free-lance writer based in Sarasota, Fla.

The pulse of the industry

Best opportunities: While IS professionals agree that major metropolitan areas offer the majority of IS employment opportunities in health care, more than one says that if he lost his job, he would try Texas.

In fact, J. Peter Thielen, manager of systems and programming at the University of Minnesota Hospitals, earmarks Chicago, Pennsylvania and the South as hot spots for health-care jobs because colleagues in those areas say they are launching new IS projects.

Salaries: Midlevel programmer analysts, systems analysts and project managers with three to five years' experience can expect to earn somewhere between $35,000 and $48,000 at HMOs and home-care providers, depending on their skills and geographical location. Hospitals pay less, with a range from $20,000 to $40,000.

Hottest job titles: The hottest job title in health care is applications development programmer, says Richard Taylor, president of ExecSource, Inc., an IS placement firm in Arlington, Texas. Other hot jobs in health care are client/server manager, database manager and systems integrator.

Technical skills needed: Client/server skills are in great demand. So are DB2 and relational database skills and PC LAN experience. Also, people with any kind of clinical systems experience will go far.

EMILY LEINFUSS

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We offer a competitive salary and generous benefits. Interview and relocation assistance will be provided. For prompt and confidential consideration, please mail your resume to: Personnel Services, Dept. CW-SA, Sacred Heart Health System, PO Box 10905, Eugene, OR 97440. We are an equal opportunity employer.

Sacred Heart Health System

Information Systems

The North Broward Hospital District a South Florida's most progressive and successful not-for-profit multi-hospital systems. The District consists of four acute care medical centers and associated satellite facilities located in the Greater Fort Lauderdale area.

We are currently seeking candidates for the following specific positions:

PROGRAMMER ANALYST: Strong PC skills, and COBOL programming background, IBM, DEC and/or Data General exp. a plus.

SYSTEMS ANALYST: Clinical systems implementation or finance/patient accounting/decision support. SMS knowledge or Nursing HBO Transkinar a plus.

SYSTEMS ANALYST: Ancillary systems implementation in pharmacy, laboratory or radiology technical support.

In addition, the qualified candidates will possess a bachelor's degree in Computer Science or related field with 4 years experience preferably in a health care environment. Must be able to manage major projects and work independently. PC skills (word processing and Lotus) a required. Programming, system design, development or re-engineering experience desirable.

The North Broward Hospital District offers a very attractive compensation and benefits package. No state or local income tax. For immediate and confidential consideration send resume with salary history and requirements to:

North Broward Hospital District

Employment Office
303 S.E. 17th St., Fort Lauderdale, FL 33316
EOE M/F/H/V

INFORMATION SYSTEMS AT MEMORIAL SLOAN-KETTERING CANCER CENTER

MSKCC in recent years has become one of the most advanced health care institutions in the application of information technology. As a research center and hospital, the applications vary from clinical to research to administrative. With a population of 5,600 people, IBM mainframes (ie, IBM 3090-400's), minicomputers, and 1,600 personal computers, the opportunities for DP professionals are broad and varied. In addition, MSKCC's advanced voice communications services support over 5,000 telephones, 1,000 voice mailboxes, 1,045 pages and hundreds of fax, modem and emergency lines.

To find out about these and future challenging opportunities available at MSKCC, please call one of our state-of-the-art Integrated Voice Response applications, the automated JOB OPPORTUNITY HOTLINE: 1-212-NEW-JOBS (1-212-639-5627) from any touch-tone phone, 24-hours a day, 7 days a week. Our compensation plans are competitive and our flexible benefits plan, including 100% tuition reimbursement, is excellent.

Alternatively, please send resume to: Ms. H. Bachan, Employment Dept. #507, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, NY 10021. Equal opportunity employer. m/f/d/v.

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Guilford County offers an attractive competitive compensation and benefits package. Please send your resume and salary history in confidence to: Guilford County Personnel Department, P.O. Box 3427, Greensboro, NC 27402. (919) 273-3324

(919) 373-3324 *EEO/AA Employer*

Software Engineer: 40 hrs./wk.; 8:30 am-5:30 pm, $37,050/yr. Req'd. Degree: Master's degree in Computer Science and 6 months experience as a Software Engineer or Computer Consultant (on-campus employment acceptable). Job duties: Resp. for: 1) Engineering and implementing software using C language in a SUN UNIX operating system; 2) Exp. must include exp. in SUN UNIX system administration; 3) 2 grad. courses in software development; 4) 1 grad. crse. in artificial intelligence; 5) 1 grad. crse. in computer graphics; 6) 1 grad crse. in computer networks; & 7) 1 grad. crse. in database. Special reqs. 1) & 2) may be met concurrently during the same 6-month period. Job duties: Analyze, design, & implement computer software for geographic information systems evaluating marketing decisions involving site location & network analysis. Design software involving concepts & methods of spatial-relational database including creation, access, & manipulation operations with object-oriented extensions. Implement efficient statistical/optimization algorithms. Qualified applicants should send resumes & verification of reqs. to: 7310 Woodward, Rm. 415, Detroit, MI 48202. Ref. #71192. Employer Paid Ad.

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Alco Health Services Corporation, the nation's fourth largest pharmaceutical distribution company, is looking for a Director of EDI. Position will be responsible for interfacing with large customers, pharmaceutical manufacturers, and internal data centers in an effort to make Alco an industry leader in EDI. A minimum of three years experience in EDI and three years of overall computer system experience are required. Candidate must have an excellent knowledge of ANSI X.12 standards. Experience with Gentran software, IBM midrange computers, and personal computers is preferred. A degree is also preferred, but not required. The successful candidate will have strong communication skills, be a self starter, and will be willing to travel extensively. Pre-employment drug screen required. Please send resume with salary requirements to:

ALCO HEALTH SERVICES CORPORATION
P.O. BOX 870, COLUMBUS, OH 43216
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No agencies or phone calls. EOE

Programmer Analyst, 40 hrs/wk., 8:00am - 5:00pm, $46,268/year. Req'd. to develop, implement, manage and test comprehensive business information and data communication systems. Development of computer information systems. Analysis of user requirements. Performance monitoring for networks. Tools: C, Pascal, CASE tool, EDI, UNIX, DBMS, SYBASE, SNMP, management tools, CLIENT/SERVER development tools, simulation tools. M.S. in Computer Science or Electrical Engineering and six months experience as a Programmer Analyst or Consultant required. Previous experience must include: SNMP tools, development of performance monitoring tools for management of local and wide area networks, interfacing of network peripherals from different operating systems, development with Sybase. Graduate education must include one project on user needs analysis as well as one course on Queing Models for Computer Communication. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to: IL-LINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention: Marena Counts. Reference #V-IL-9180-C NO CALLS. An Employer Paid Ad.

System Analyst in consult on business system design and development, providing computer systems consulting services to our clients in order to ascertain specific system requirements; utilize programming languages, operating software and operating systems including DB2, IMS DB/DC, PARADOX, Assembler/BAL, PLI, Cobol, JCL and IBM utilities, and CICS in design, development and modification of systems on an IBM mainframe including employee database, payroll, personnel analysis, human resource activity report and system security; also utilize PARADOX on IBM-PC prepare technical reports and memoranda as required. Master of Science degree in Computer Science required as well as 3 months experience in job offered or 3 months experience as Computer Science Lab Instructor. Experience and/or academic program must have included DB2, IMS DB/DC, PARADOX, Assembler/BAL, PLI, Cobol, JCL and IBM utilities, CICS and both IBM mainframe and IBM PC (or compatible) hardware environments. Must have proof of legal authority to work permanently in the U.S. 40 hours, 7:45am to 4:15pm, $36,000/year. Send 2 copies of resume to Illinois Department of Employment Security, 401 S. State-3 South, Chicago, IL 60605. Attn: Marena Counts. Ref #V-IL-9183-C. No Calls. Employer Paid ad.

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We offer a competitive salary, relocation assistance, plus an excellent benefits package. For confidential consideration, please submit a letter of application detailing previous experience, qualifications and salary history to: Human Resources, Dept. MW, Reader's Digest, Pleasantville, New York 10570. NO PHONE CALLS PLEASE. An Equal Opportunity Employer M/F/H/V.

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PROGRAMMER/SCIENTIFIC. Research, design, code, test, implement and maintain real time computer operating systems and peripheral for use in scientific research and other technical applications. Bachelor's degree in physics or chemistry required with at least 5 years experience in programming scientific application computer software. In depth knowledge of operating system development required as well as demonstrated skill in the use of "C" programming language. 40 Hrs./wk., $38,000/yr. Must have proof of legal authority to work in the United States. Send your resume to Job Service of Iowa, 150 Des Moines Street, Des Moines, Iowa 50309. Refer to Job Order IA1100153. This advertisement is paid for by the employer.

Director, Networking Services & Technical Support

Magee-Womens Hospital, a comprehensive health facility dedicated to the needs of women and infants, is seeking a Director of Networking Services & Technical Support. Reporting directly to the Chief Information Officer, the incumbent will be responsible for developing and managing technical action plans for all computer resources necessary to satisfy the medical and business needs of the hospital. Functionally responsible for data center operations, networking services, communications and resource utilization. Qualified candidates will have a B.S., a minimum of 10 years progressive experience in data processing. Management experience in data center and/or networking operations necessary.

Magee-Womens Hospital is a corporate affiliate of the University of Pittsburgh offering an advanced professional setting, opportunities for career growth, a competitive salary, flexible benefits, and on-site day care. For consideration, send or fax resume, cover letter and salary requirements by November 15th to: MMP, Office of Human Resources, Magee-Womens Hospital, 300 Halket Street, Pittsburgh, PA 15213-3180. FAX #(412)-641-1328. (EOE employer)

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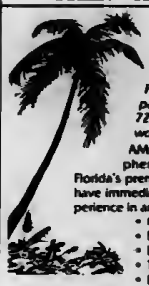
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Don't let mail order take you to the bank



BY TODD HENSCHELL
SPECIAL TO CW

When purchasing PCs and related peripherals by mail, it pays to ask the right questions before placing the order. While there are hundreds of questions to ask, some basic ones are important in any purchase.

Q Does a system advertised at a low price have the functions to meet my business needs?

A Mail-order ads often list prices for a basic system, so it pays to ask about things such as memory capacities, disk space, types of video boards and monitor quality.

"We make sure that the price the vendor quotes is the price of the entire system," says Ben Chiu, president of Jensen Gema-Volstatic, a designer of turbochargers. "A mail-order vendor might charge $2,300 for a complete CAD system, but you can't successfully use the system without adding some things."

Q What happens if the system arrives broken or in otherwise poor condition?

A Every vendor has different return policies, and it's up to you to ask. Some will never return your money. Others will take their system back within a reasonable period and quickly refund the purchase price.

If a dealer chooses to fix the system rather than replace it, find out how long it will take. For a more realistic turnaround time, double the figure the dealer gives you.

When prodded, some vendors will ship a replacement unit before you ship back the broken one. If they send you one on time, consider yourself blessed.

The same goes for problems with missing components or incorrectly shipped items. The vendor should send out repair or replacement parts within 24 hours.

Whatever the terms are, have the vendor fax you a copy of the return and repair policy before you plunk down money.

Q What kind of product and technical support does the vendor offer?

A The better mail-order vendors have 24-hour, toll-free support. If it's a local firm, this may not be important, but if it's 2,000 miles and three time zones away, technical help during your work day is priceless.

Call the vendor prior to placing the order to find out how well-staffed its support lines are: Call once during normal business hours and again during nonpeak hours. Some firms cut corners by having fewer support technicians during off hours.

If you can't get through during a test call, chances are you'll be stuck later when you really need help.

Q What happens if I want to expand or upgrade my system with an add-in board?

A You may find your options limited if the system you purchase does oot use generic parts.

This can be particularly troublesome with laptops. Some manufacturers use generic parts but alter them just enough so the standard parts won't work.

If your firm typically keeps systems for more than three years or upgrades them often, you may want to ask whether you can replace parts with standard equipment.

Q Does the vendor offer a hardware upgrade path?

A Some mail-order companies offer a built-in upgrade path; however, the proprietary components used by certain manufacturers are sometimes so costly that the upgrade option isn't worthwhile.

Other firms have priced their CPU modules and local bus boards very aggressively, making them attractive for a growing company. Look for systems with Intel Corp.-compliant local bus designs and reasonably priced CPU modules.

The disk subsystems, memory and monitor are the majority of the cost of a PC, so a fairly priced option to upgrade a 386 to a 486 or a P5 and beyond can save you money.

Generous manufacturers may even give you a discount for returning your old CPU modules or boards when you upgrade, if you ask for it.

Q Does the company make substitutions when it is short of stock?

A Certain product features may not match those in the advertisement. Changes are usually limited to minor features such as equipment cases, but important items such as the brand of tape drive, floppy drive or video board can also be swapped. For example, Cathryn Jaymes, owner of Jaymes & Company Management in Los Angeles, ordered PCs with a certain video board and "ended up with a much slower board instead."

A safe bet is to pin down the fine details before filling out the order form.

Henschell is a PC consultant and a free-lance writer based in Burbank, Calif.

Don't forget to...

- Put the purchase on a company credit card if you can. If you have a problem with maintenance or a missing part that isn't easily resolved, the credit card company can stop payment while it investigates the problem; it may even reimburse you.
- Ask for a brand-name item if you want it. Mail-order vendors may throw it in even when it is not oormally part of its product line. Commonly swapped brand-name items include hard disks, video boards and floppy and tape drives.
- Find out how much the vendor charges for extra memory or a bigger hard disk. A commoo practice of little-known vendors is to sell stock systems with practically no memory and make it up on after-sale purchases.
- Ask whether the warranty will be void if you add anything to the system or open the case during installation.

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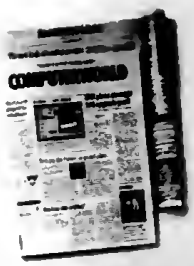
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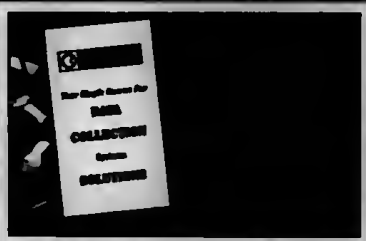


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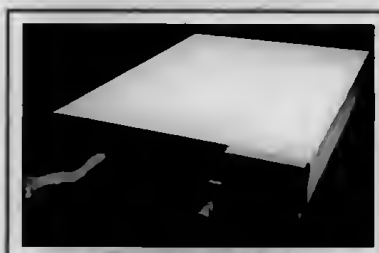
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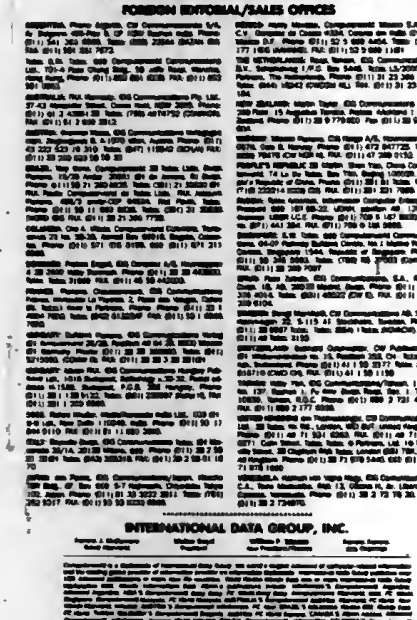
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K
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M
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Mercury Interactive, Inc. .6
Merrill Lynch & Co. .1,8,20
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Siemens/Nixdorf Information Systems, Inc. .1
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Vertical Systems, Inc. .57
Virginia Systems, Inc. .41
Visix Software, Inc. .12
VLSI Technology, Inc. .41

W
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X
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Y
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Street talk

How will tomorrow's election affect computer industry stocks?

"Short term, the effect on computer stocks will be directly related to the effect on the overall stock market. Long term, certainly one of the candidates seems to be saying more positive things about technology than the others, but we'll see how that goes."

Laura Conigliaro
Prudential Securities, Inc.

"Most of the effect is in the anticipation. People say this or that will change if Clinton is elected, but based on past history, things don't change as fast as people anticipate."

Marty Resinger
Duff and Phelps, Inc.

Industry Almanac

STEAMROLLER

Analysts blitzed Wall Street with glowing reports following **Microsoft Corp.**'s (MSFT) excellent quarterly results announcement: Revenue went up 41% over the year-ago quarter, and earnings per share rose 40%. The Redmond, Wash., software giant's momentum should continue, though analysts mentioned several significant obstacles it faces in the courtroom and in the marketplace:

•Piper Jaffray, Inc. Vice President David Rothschild said he expects Microsoft's continued growth to be fueled by "business momentum" rather than by specific application releases. An Oct. 15 report awarded Microsoft a Buy rating.

Piper Jaffray expressed doubt that the Federal Trade Commission's investigation of Microsoft will find violations of antitrust laws. Microsoft's leadership on the **Apple Computer, Inc.** Macintosh platform indicates that Microsoft can dominate application sales on operating systems it did not create.

•Analyst Lucianne Painter at Salomon Brothers, Inc. also rated Microsoft as a Buy in a report issued Oct. 16. Salomon Brothers said it expects five key products to drive further revenue growth in the coming year: Windows for Workgroups, the forthcoming Access database system, FuxPro 2.5 for Windows, DOS 6.0 and Windows New Technology.

•A study by Bear, Stearns & Co. of 2,000 computer managers in the U.S. found 90% of the respondents using Windows in some fashion. Windows adoption is causing most of these firms to reevaluate their applications software, giving Microsoft another opportunity for sales. Analyst Louis Giglio gave the stock a Buy rating in an Oct. 16 report.

However, Microsoft's competitors are strongly positioned in some areas. Windows for Workgroups, announced last week, may find tough sledding against **Artisoft, Inc.**'s (ASFT) LANtastic peer-to-peer networking product. Giglio noted LANtastic's technological advantages, including lower resource requirements than Windows for Workgroups, and awarded Artisoft's stock a Buy rating as well.

DEREK SLATER

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, OCTOBER 30, 1992

TOP PERCENT GAINERS

Cray Computer	50.00
Sequoia Systems Inc.	42.86
Datarom Corp.	33.33
Spinnaker Software	33.33
Data Race Inc.	30.17
Boole & Babbage (H)	29.30
Sapiens USA Inc. (H)	27.27
Convex Computer	26.63

TOP PERCENT LOSERS

Microage Inc.	-22.22
Gandalf Technologies Inc.	-17.29
Zeos International Ltd.	-15.38
System Software Assoc.	-14.29
Wordstar	-13.33
Cognitronics Corp. (H)	-12.80
Artel Communication Corp.	-12.47
Everex Systems Inc.	-12.47

TOP DOLLAR GAINERS

Boole & Babbage (H)	5.63
Adobe Systems Inc.	5.13
Northern Telecom Ltd.	4.30
Data Race Inc.	4.38
Storage Technology	4.13
Apple Computer Inc.	3.75
Chipcom Corp.	3.75
Synoptics Communications	3.50

TOP DOLLAR LOSERS

System Software Assoc.	-3.63
Xerox Corp.	-3.00
Matsushita Electronics	-2.25
IBM (L)	-2.13
Microage Inc.	-2.00
Cognitronics Corp. (H)	-1.75
Group I Software	-1.25
Sierra Semiconductor	-1.13

Exch	52-Week High	52-Week Low		Oct. 30 Close	Wk Net Change	Wk Pct Change
Communications and Network Services			**Up 2.07%**			
OTC	21.00	9.63	3COM Corp. (H)	21.00	2.88	13.75
NYS	75.63	66.25	American Info Techs Corp.	66.75	1.50	2.30
NYS	50.38	39.88	AT&T	43.63	0.88	2.05
OTC	4.25	0.75	Ariel Communication Corp.	1.31	-0.19	-12.47
OTC	22.00	10.25	Banyan Systems Inc.	20.13	0.63	3.21
NYS	49.75	40.25	Bell Atlantic Corp.	47.25	1.38	3.25
NYS	65.00	43.38	Bellsouth Corp.	61.75	0.63	1.22
NYS	9.79	3.63	Bolt, Beranek & Newman	4.00	0.13	3.23
NYS	66.25	28.63	Cabletron Systems (H)	65.00	0.00	0.00
OTC	31.00	17.50	Chipcom Corp.	24.25	3.75	18.29
OTC	50.00	23.38	Cisco Systems Inc. (H)	50.00	1.80	3.56
OTC	66.25	9.80	Compression Labs Inc.	10.25	1.00	10.81
OTC	3.38	0.88	Data Switch Corp.	2.00	0.06	3.26
NYS	33.63	13.75	Digital Comm. Assoc.	16.75	1.50	9.84
OTC	15.25	7.75	Digital Systems Int'l Inc.	9.13	-0.50	-5.80
OTC	17.25	3.63	DSC Communications (H)	17.25	2.75	18.97
OTC	10.88	4.75	Fibronics Int'l Inc.	9.50	-0.75	-10.34
OTC	37.50	10.00	Fibronet Corp.	19.00	-0.88	-5.19
OTC	3.38	1.13	Gandalf Technologies Inc.	1.50	-0.31	-17.26
OTC	2.25	0.88	Gateway Communications	1.88	-0.19	-12.03
NYS	5.50	2.88	General Datacomm Inds.	4.00	0.13	3.23
ASE	6.88	0.50	Go Video	2.88	0.00	0.00
NYS	28.75	26.88	GTE Corp.	34.13	0.75	2.25
NYS	70.63	50.00	ITT Corp.	65.13	0.18	0.28
OTC	66.75	25.25	MCI Communications Corp.	38.38	0.13	0.34
OTC	14.50	3.25	Microcom Inc.	3.38	0.00	0.00
NYS	18.25	8.50	Network Equipment Tech.	11.38	-0.88	-7.14
OTC	23.50	9.00	Network General	14.38	-0.13	-0.86
OTC	20.00	8.50	Network Systems Corp.	13.63	0.63	4.81
OTC	24.75	5.63	Newbridge Networks Corp. (H)	23.13	-0.63	-2.63
NYS	80.25	30.88	Northern Telecom Ltd.	38.76	4.90	18.14
OTC	32.50	22.13	Novell Inc.	30.50	-0.50	-1.61
NYS	88.38	68.13	Nynex Corp.	83.88	1.63	1.98
OTC	37.50	14.50	Octel Communications Corp.	20.00	1.00	5.26
OTC	6.88	3.38	Penril Data Comm. Netwks.	4.25	0.38	9.68
OTC	53.00	10.25	Picturetel Corp.	20.63	1.38	7.14
OTC	18.75	7.00	Protean Inc. (L)	9.25	0.50	5.45
NYS	30.00	13.88	Scientific Atlanta Inc. (H)	29.88	1.13	3.91
NYS	70.50	66.25	Southwestern Bell Corp.	66.75	1.13	1.71
NYS	36.38	28.63	Sprint Corp.	35.63	0.50	1.39
OTC	21.13	4.88	Standard Microsystems Corp.(H)	10.88	1.25	13.01
OTC	61.00	14.50	Synoptics Communications	61.00	3.50	6.09
NYS	40.00	32.88	US West Inc.	37.75	0.50	1.66
NYS	52.23	24.00	WellFleet Communications (H)	32.63	2.25	4.47
PC and Workstations			**Off 1.08%**			
OTC	13.50	3.50	Advanced Logic Research	4.00	-0.50	-11.11
OTC	70.00	41.50	Apple Computer Inc.	52.50	3.75	7.69
OTC	24.50	11.25	AST Research Inc.	18.25	-0.25	-1.35
NYS	10.75	6.75	Commodore Int'l	7.25	-0.13	-1.69
NYS	42.38	22.13	Compaq Computer Corp	40.50	2.00	5.19
OTC	39.63	13.91	Dell Computer Corp. (H)	34.13	-0.50	-1.44
OTC	7.76	0.88	Everex Systems Inc.	1.31	-0.19	-12.47
NYS	34.00	21.25	Harris Corp	33.88	0.13	0.37
NYS	85.00	44.63	Hewlett-Packard Co	50.88	1.75	3.17
NYS	22.75	14.13	Silicon Graphics	24.75	1.13	4.75
OTC	35.88	20.75	Sun Microsystems Inc.	35.25	2.25	10.16
NYS	31.25	22.25	Tandy Corp.	25.50	-0.25	-0.93
NYS	11.13	5.50	Zenith Electronics	5.75	-0.13	-2.13
OTC	25.50	2.75	Zeos International Ltd.	4.13	-0.75	-15.38
Large Systems			**Up 7.26%**			
ASE	20.23	7.75	Amdahl Corp.	9.13	0.25	3.17
NYS	16.38	4.75	Convex Computer	7.75	1.63	66.63
OTC	17.88	1.88	Cray Computer	5.25	1.75	50.00
NYS	52.25	19.00	Cray Research Inc. (L)	21.25	0.25	1.19
NYS	19.13	7.13	Data General Corp.	10.75	-1.13	-9.47
NYS	85.50	32.88	Digital Equipment Corp. (L)	33.75	-0.13	-0.37
NYS	101.38	65.00	IBM (L)	66.88	-2.13	-3.09
OTC	13.25	4.50	Kendall Square Research	7.75	0.00	0.00
NYS	110.25	66.25	Matsushita Electronics	91.00	-2.25	-2.80
OTC	17.80	9.00	Pyramid Technology	9.75	-0.25	-2.75
OTC	17.88	9.88	Sequent Computer Sys.	14.33	-1.00	-6.40
OTC	14.38	3.75	Sequoia Systems Inc.	5.00	1.80	42.86
NYS	54.25	39.50	Stratus Computer Inc.	52.50	-0.13	-0.75
NYS	19.13	9.50	Tandem Computers Inc.	13.13	2.00	17.98
NYS	11.75	3.63	Unisys Corp.	8.38	-0.13	-1.47
ASE	7.50	0.25	Wang Labs Inc. (b)	0.44	0.00	0.00
Software			**Up 4.78%**			
OTC	66.50	25.25	Adobe Systems Inc.	38.33	9.13	19.50
OTC	44.25	10.25	Aldus Corp.	16.00	1.50	10.34
OTC	19.75	7.00	American Software Inc.	9.25	0.13	1.54
OTC	20.00	9.75	Ask Computer Systems	16.13	-0.25	-3.01
OTC	53.00	23.23	Autodesk Inc.	50.75	-0.25	-0.49
OTC	32.79	3.75	Blackman Info. Systems	5.50	1.00	22.22
OTC	42.50	32.00	BGS Systems Inc.	38.50	1.00	2.67
OTC	75.00	27.25	BMC Software Inc.	50.00	1.63	2.75
OTC	25.50	11.88	Boole & Babbage (H)	25.50	5.23	28.30
OTC	66.75	25.25	Borland Int'l Inc.	34.25	3.25	7.03
OTC	11.50	3.63	CE Software	8.75	0.25	2.94
ASE	27.25	9.88	Cheyenne Software Inc. (H)	27.25	3.25	13.54
OTC	13.88	5.63	Cognos Inc.	5.88	0.13	2.17
NYS	18.13	9.63	Computer Associates (H)	17.50	0.00	0.00
NYS	12.38	4.75	Computervision Corp.	6.00	1.00	20.00
OTC	30.00	6.75	Comshare Inc.	10.25	-1.25	13.86
OTC	47.88	6.00	Excel Corp.	6.75	0.00	0.00
OTC	25.00	11.50	Group I Software	13.00	-1.25	-8.77
OTC	9.63	3.88	Hogan Systems Inc.	6.88	0.88	17.56
OTC	36.25	16.50	Information Resources	27.75	0.00	0.00
OTC	31.00	5.88	Informix Corp. (H)	26.75	1.38	9.02
OTC	22.38	11.50	Intergraph Corp.	13.00	0.00	0.00
OTC	19.00	7.00	Interleaf Inc.	11.63	-0.13	-1.09
OTC	20.25	10.25	Intersolv Inc.	14.88	-0.88	-5.56
OTC	21.88	9.50	Knowledgeware Inc.	13.33	1.25	10.42
OTC	68.25	38.75	Legent Corp.	44.50	1.88	4.16
OTC	38.75	14.75	Lotus Development	30.13	0.88	2.85
OTC	7.88	1.88	Mecs Software	2.75	0.00	0.00
OTC	22.25	9.38	Mentor Graphics	7.25	0.00	0.00
OTC	37.88	27.25	Micro Focus (H)	36.63	0.00	0.00
OTC	20.50	9.50	Microgrnfx Inc.	9.75	1.25	14.71
OTC	90.25	50.50	Microsoft Corp. (H)	86.75	0.13	0.14
OTC	23.38	13.00	Oracle Corp. (H)	22.25	-0.88	-3.75
OTC	63.38	18.63	Parametric Technology	61.00	1.50	2.52
OTC	11.50	9.50	Phoenix Technologies	4.00	-0.50	-11.11
OTC	25.25	11.25	Platinum Technology	19.25	1.00	5.48
OTC	55.50	29.00	Progress Software Corp (H)	53.50	0.50	0.94
OTC	39.63	4.00	Quarterdeck Office Sys.	6.88	0.13	2.17
OTC	32.75	11.75	Rainbow Technologies Inc.	23.25	1.25	5.68
OTC	22.75	4.50	Reasoning	8.25	0.00	0.75
OTC	17.25	3.23	Ross Systems (L)	8.13	0.13	2.50
OTC	19.75	8.50	Sapiens USA Inc. (H)	19.75	3.38	27.27
OTC	28.25	8.75	Software Publishing Corp.	8.13	0.75	9.98
OTC	8.50	2.00	Software Toolworks Inc.	4.00	0.63	18.52
OTC	7.25	0.75	Spinnaker Software	1.50	0.38	33.33
OTC	16.50	3.25	State of the Art	8.75	-0.50	-5.00
OTC	25.25	13.75	Sterling Software Inc.	19.88	1.38	7.99
OTC	30.00	8.00	Strat. Dynamics Research	11.00	0.25	2.33
OTC	41.75	18.25	Sybase Inc.	41.75	1.88	4.70
OTC	91.00	9.88	Symantec Corp.	12.63	0.88	7.49
NYS	15.50	5.25	Systems Center Inc.	6.88	-0.13	-1.75
OTC	64.25	13.00	System Software Assoc.	21.75	-3.63	-14.66
OTC	13.25	2.50	Tirnzic Corp.	3.88	0.25	6.90
OTC	23.75	14.80	Walker Interactive Systems	19.23	-0.38	-1.97
OTC	5.88	1.80	Wordstar	1.83	-0.25	-13.33
Semiconductors			**Up 2.67%**			
NYS	21.50	7.88	Advanced Micro Devices	16.00	2.13	14.75
NYS	12.00	7.13	Analog Devices Inc. (H)	12.00	0.50	4.35
OTC	13.75	8.75	Atmel Corp. (H)	13.50	0.75	5.88
OTC	14.13	3.25	Chips and Technologies	4.00	0.13	3.23
NYS	19.63	7.88	Cypress Semiconductor Corp.	8.88	0.75	9.70
NYS	12.88	6.75	Dallas Semiconductor	12.00	-0.38	-3.03
NYS	66.13	39.75	Intel Corp. (H)	57.00	0.38	0.66
NYS	9.88	4.88	LSI Logic Corp.	8.00	1.00	14.29
NYS	22.88	12.13	Micron Technology	16.38	0.13	0.65
NYS	97.75	67.50	Motorola Inc. (H)	86.00	0.75	0.75
NYS	13.63	4.88	National Semiconductor (H)	12.25	-0.88	-6.67
OTC	27.00	8.25	Sierra Semiconductor	13.13	-0.88	-6.25
NYS	50.50	26.00	Texas Instruments (H)	49.13	0.38	0.77
OTC	10.50	6.00	VLSI Technology	7.50	0.25	3.45
OTC	7.00	2.13	Wafertech	4.88	-0.25	-4.88
ASE	3.25	2.00	Western Digital Corp. (H)	2.88	0.38	5.75
OTC	31.00	14.50	Xilinx	19.75	1.88	7.14
OTC	30.50	15.00	Zilog Inc. (H)	30.50	0.25	0.83
Peripherals and Subsystems			**Up 5.30%**			
OTC	11.13	3.50	Archive Corp. (H)	10.63	0.13	1.19
OTC	66.75	13.75	Banctec Inc.	24.75	0.13	0.61
OTC	23.50	9.25	Cambex Corp.	14.75	2.75	22.92
ASE	14.50	5.88	Cognitronics Corp. (H)	12.23	-1.75	-13.50
NYS	33.25	12.50	Conner Peripherals	19.75	0.50	2.33
OTC	19.88	14.25	Data Race Inc.	19.88	4.38	30.17
ASE	16.88	4.75	Datarom Corp.	6.00	2.00	33.33
NYS	24.00	9.88	EMC Corp. (H)	23.38	0.50	2.19
OTC	9.38	6.25	Emulex Corp.	8.25	0.00	0.00
OTC	23.00	13.25	Evans & Sutherland	17.25	1.50	9.52
OTC	40.63	12.00	Exabyte	15.13	-1.13	-6.92
OTC	34.00	15.75	Intelligent Info. Systems (H)	33.23	1.13	3.86
OTC	11.25	4.75	Iomega Corp.	7.50	1.25	20.00
OTC	34.78	10.25	IPL Systems Inc.	12.50	1.25	11.11
OTC	31.25	10.75	Komag Inc.	19.00	-0.25	-1.30
OTC	15.63	4.88	Maxtor Corp.	14.88	1.25	9.52
OTC	21.63	6.50	Micropolis Corp.	7.25	-1.88	-20.77
NYS	105.13	85.38	3M Co. (H)	102.88	-0.25	-0.24
OTC	6.75	3.50	Printronix Inc.	4.79	-0.25	-5.00
NYS	24.88	9.88	QMS Inc.	7.75	-0.88	-4.62
OTC	18.25	7.88	Quantum Corp.	13.00	-0.25	-1.89
OTC	12.75	3.75	Reflex Inc.	8.00	0.75	14.29
NYS	13.88	8.50	Recognition Equipment	13.63	1.23	14.77
OTC	13.13	5.63	Rexon Inc.	10.88	0.13	1.16
OTC	12.50	7.75	Seagate Technology	14.88	0.00	0.00
NYS	75.00	21.00	Storage Technology	25.63	4.13	16.18
NYS	23.88	16.00	Tektronix Inc.	21.13	0.00	0.00
NYS	82.25	60.25	Xerox Corp.	74.25	-3.00	-3.88
Services			**Up 1.45%**			
OTC	21.75	11.38	American Mgmt. Systems (H)	21.75	0.88	4.19
NYS	5.38	3.88	Anacomp Inc.	3.75	0.25	7.14
OTC	21.25	12.80	Analysts Int'l	21.25	1.25	6.23
NYS	98.00	66.13	Auto Data Processing	88.88	0.38	1.84
NYS	16.38	7.00	Candies Corp. (H)	16.38	1.25	8.26
NYS	23.44	13.30	Comdisco Inc.	15.13	0.38	2.54
OTC	13.50	7.00	Computer Horizons (L)	7.80	0.25	3.49
NYS	84.88	57.00	Computer Sciences	69.75	3.25	4.89
NYS	10.13	7.00	Computer Task Group	7.75	0.25	3.13
OTC	40.50	15.00	CompUSA Inc.	39.25	-0.25	-0.63
OTC	19.25	9.00	Corporate Software	10.88	0.25	2.35
OTC	30.75	7.75	Egghead Discount Software	10.00	2.00	25.00
NYS	33.00	25.25	General Motors E (EDS)	29.00	0.38	1.31
OTC	30.38	9.25	Intelligent Electronics	10.75	-1.00	8.51
OTC	14.86	9.63	Manpat	10.13	1.13	12.80
OTC	15.75	7.00	Metrogas Inc.	7.00	-2.00	-22.22
OTC	35.75	17.88	Policy Mgmt. Systems (H)	34.00	-1.00	-2.86
NYS	77.25	66.00	Policy Management Sys. (H)	75.00	0.00	0.00
NYS	49.38	27.88	Reynolds and Reynolds (H)	46.88	1.25	2.83
OTC	32.00	23.00	SEI Corp.	27.25	-0.38	-1.36
OTC	24.88	19.88	Shared Medical Systems	21.63	0.38	1.76
OTC	30.00	16.00	Sungard Data Systems	29.00	0.25	0.87
NYS	3.63	1.13	Ultimate Corp.	1.25	-0.13	-9.09

KEY: (H) = New annual high (L) = New annual low

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IN BRIEF

EDI profits up 15%

■ Spurred by growth in its non-General Motors Corp. business, **Electronic Data Systems Corp.** last week posted third-quarter net income of $167.3 million, a 15% increase from the year-earlier period. Revenue at the Dallas company rose 19% to $2.06 billion in the quarter ended Sept. 30.

■ Reversing two consecutive losses, **Data General Corp.** reported a fiscal fourth-quarter profit of $2.7 million, compared with a $9.9 million loss for the same period last year. Revenue for the quarter, however, was off 2% from the fourth quarter of 1991 but up 11% from the previous period.

■ **Legent Corp.** posted fourth-quarter operating profits of $27.7 millioo, up 67% from the year-earlier period. A onetime charge of $34.5 million to cover the acquisition of **Goal Systems International, Inc.** turned the profit into a $7.6 million net loss, however. Revenue for the period grew 20% to $124.4 million in the period ended Sept. 30. For the full year, the Vienna, Va., company posted profits of $27.7 millioo on revenue of $426 million.

■ **Tandem Computers, Inc.** reported fiscal fourth-quarter profit jumped 89% to $27.2 million on revenue of $576.3 million — a 13% hike from the same period last year. The quarterly profit reduced the Cupertino, Calif., firm's fiscal 1992 loss to $41.2 million, compared with profits of $35.2 million last year. Tandem took a $106 million first-quarter pretax charge to cover restructuring costs.

■ Client/server applications upstart **PeopleSoft, Inc.** in Walnut Creek, Calif., filed for an initial public offering last week of 2.7 million shares, to be priced between $12 and $14 each. PeopleSoft booked $32 million in sales for fiscal 1992, up from $17 million last year.

Myriad challenges face new HP CEO

Platt must maintain minicomputer and workstation momentum while pumping up PC business

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — It seems fitting that the Hewlett-Packard Co. executive chosen to take over for 14-year Chief Executive Officer John Young spent his first official day in office en route to Amsterdam. Europe, after all, has been a recent trouble spot for HP, as the company has blamed the Continent in part for the uncharacteristic financial softening that has set in during the last couple of quarters.

But Lew Platt's challenges go well beyond getting HP's European house in order. The 52-year-old arrives as the company approaches a landmark juncture in a corporate history rooted in analytical products but branched predominantly in computers.



Lew Platt *must maintain a smooth management transition*

Platt's most fundamental challenge is to maintain a smooth management transition, a process begun in August. "I feel a lot more comfortable taking over the reins now than I would have three months ago," he said.

Platt takes over following a soft third quarter, during which earnings declined 1% to $191 million on revenue of $4 billion. HP recently instituted a voluntary severance program aimed at cutting 2,700 jobs.

But HP has outperformed its competitors through an industry retrenchment, a feat that has not gone unnoticed among rivals. "One of the problems of being one of the leaders is everyone goes after you," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco.

Platt, who is HP's first CEO to come out of the company's computer operations sector, takes over a business that includes three success stories — minicomputers, workstations and printers — and two enigmas — PCs and New Wave.

To help keep a grip on the company's computer operations, Platt is believed to have played a key role in a reorganizatioo that officially took hold yesterday and that eliminated a layer of management between the CEO's office and computer operations.

Platt must now figure out how to sell computers more effectively to a corporate world swept up in downsizing fever. HP has for a long time lived with a gap between high acceptance among eager information systems shops and less impressed corporate executives who sign on the dotted lines.

Rich Sevcik, vice president in charge of HP's minicomputer operations, noted that Platt, who headed HP's computer group, is different from Young, who came out of HP's test and measurement unit. Platt "is a lot more knowledgeable on the intricacies of the computer industry," Sevcik said.

Many users said Platt must improve HP's top-down selling approach. If HP is to successfully take on IBM in the data center, it is up against a formidable opponent — albeit one that is also in the throes of change.

"If they're going to sell directly against IBM, they have to do what IBM does," said Eric Fisher, principal at Fisher Systems Consulting in Groton, Mass. "They have to develop high-level relationships and do top-down selling. Lew Platt has to take the chairman of Bank of America to lunch."

Herwick agreed and said he is optimistic that Platt will strengthen HP's sales savvy. "If there's one thing that Mr. Platt understands, it's CEO selling. He brings an aggressiveness and sharp suits."

By the same token, users pointed out that HP must also raise its profile.

Rodger Lindquist, manager of business systems development at Bio Rad Laboratories, Inc., a Hercules, Calif., maker of diagnostic equipment and reagents, recalled a time while he was IS manager at Dryers Brand Ice Cream when IBM nailed a sale to Dryers. After an initial round of contacts, Lindquist said, IBM "sent in this closer guy" with all the polish and persuasiveness it took to consummate the deal.

New direction

Platt steps in as HP embarks on a mainframe alternative initiative built around Corporate Business Systems, the company's new line of high-end minicomputers introduced in May. The company is marketing the line in two forms: its proprietary MPE operating system and its HP/UX Unix implementation.

As Platt oversees that program, he must continue to maintain a fine balance between promulgating the company's fast-growing Unix line and not alienating HP's traditional MPE customer base (see story page 67). Already, Platt has to cope with product delays. The new systems were to have shipped in the summer, but HP delayed delivery until this month. Platt must drive the company to have the systems ready soon, lest protracted delays hit HP's credibility or sway corporate purchasers to pick a more readily available brand.

At the same time, observers noted, Platt must set realistic goals for the data center assault. Platt said that in "most cases, we will co-exist with mainframes."

To help sell into the data center — and to help move total solution packages into large corporations — HP must also improve its service, integration and support offerings, observers said.

To that end, the company recently announced agreements with integrators Computer Sciences Corp. and Science Applications International Corp. as part of a client/server initiative that also includes dozens of software vendors [CW, Oct. 19]. Sources said Platt was the impetus behind that move.

Meanwhile, users and analysts agreed that Platt must shift HP's PC business into high gear. Platt has already formulated a plan to improve PC sales. He has authorized the company's direct-sales force to offer PCs, marking a switch from the company's indirect-only approach.

The company's New Wave, likewise, has an unclear future as well as an unstable past. A product that HP originally introduced as an operating environment, New Wave is essentially positioned — or at least perceived — as a desktop utility.

"Unless they can find a way to make it an irresistible alternative to people, it's pretty much a dead issue," Fisher said.

> "IF THERE'S ONE thing that Mr. Platt understands, it's CEO selling. He brings an aggressiveness and sharp suits."
>
> ROBERT HERWICK
> HAMBRECHT & QUIST

HP closes on No. 2

With relatively little notice, HP, Silicon Valley's largest technology company, has grown close to becoming the second largest computer vendor in the U.S.

It may be a bitter pill for the proud denizens of the East Coast to swallow, but this means Digital Equipment Corp. — with 108,000 employees compared with HP's 90,000 — could slip to No. 3.

Is this really happening? It depends how you measure it. HP and DEC are on different fiscal years, with HP's ending Oct. 31 and DEC's ending June 30. Hambrecht & Quist analyst Robert Herwick estimated that on a July 1992 to July 1993 basis, about $13.4 billion of HP's estimated $17.9 billion will come from sales of computers and computer services. For the same period, DEC will tally about $14.3 billion, Herwick predicted.

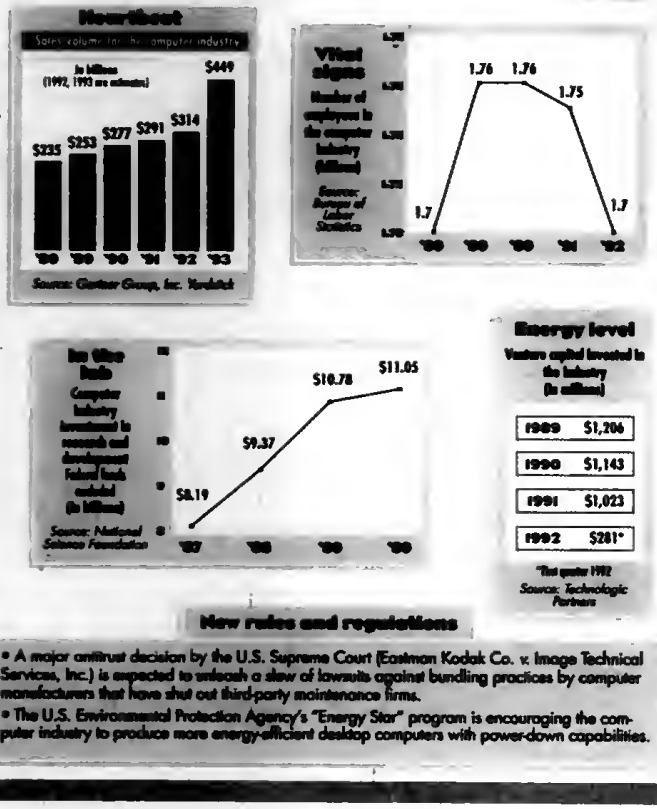
But in that period, HP will sell more computer products than DEC, which derives 47% of its revenue from services and systems integration, Herwick said. He added that HP's service and integration component is about 33%.

On an overall scale of products and services, Herwick said HP "stands a good chance" of passing DEC in 1994. Herwick estimated that HP will tally $16.4 billion in revenue for the year that just ended, and it will report earnings of about $960 million, up from $755 million the previous year.

MARK HALPER

Watch

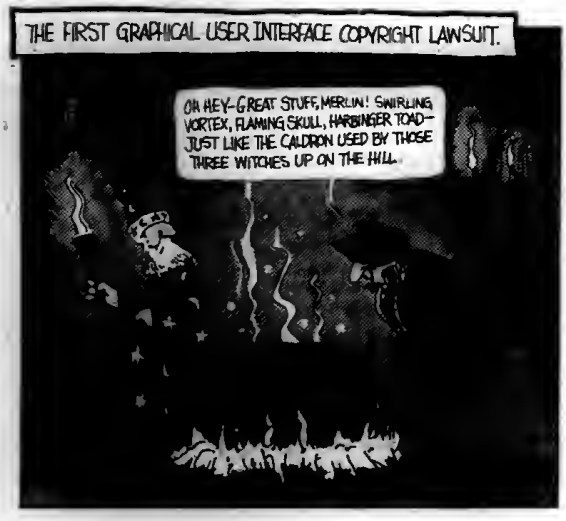
A guide to the health of the computer industry



New rules and regulations

- A major antitrust decision by the U.S. Supreme Court (Eastman Kodak Co. v. Image Technical Services, Inc.) is expected to unleash a slew of lawsuits against bundling practices by computer manufacturers that have shut out third-party maintenance firms.
- The U.S. Environmental Protection Agency's "Energy Star" program is encouraging the computer industry to produce more energy-efficient desktop computers with power-down capabilities.

The 5th Wave



INSIDE LINES

The wait continues

Delivery of IBM's AIX DBMS has been delayed until sometime next year, confirmed Don Hederle, director of strategy and architecture at IBM's enterprise database solutions group. The AIX data manager, which IBM had originally promised by last February, "is taking a little longer because we want it to be right," he said. Part of the reason for the delay was because product development was moved from the Personal Systems line of business to the Programming Systems group. Some things don't change, though: Plans are still on for the AIX data manager to have a "common code base" with the OS/2 database manager, Hederle added.

Can't beat 'em, join 'em

Apple has System 7.0 up and running on Intel chips in its labs, one source says, and may finally be serious about getting a piece of the operating system software market in the IBM-compatible world. The source says Apple is still trying to discern the impact such a move would have on its own sales.

High test or unleaded?

AT&T Systems Leasing in Bloomfield Hills, Mich., is getting ready to introduce a new kind of leasing program based on a negotiated per-MIPS rate that would allow customers to quickly add processing power. "You'd lease functionality, not the computer itself," a company spokesman explained. "It's like leasing the mileage instead of the car." Competitor Comdisco already has a similar program.

Working on the railroad

Burlington Northern earlier this year appeared headed toward an outsourcing deal with Perot Systems and then switched tracks to an internal IS overhaul led by consultant Charles Feld. But the story may not be over. Last week, the Fort Worth, Texas-based railway giant held preliminary discussions with former Compaq CEO Rod Canion and his partner, Ron Fisher, both principals at Insource Management Group. Neither party last week would discuss how an Insource deal — if one indeed materialized — would affect or complement Feld's role.

Ahoy, OSI starboard!

DEC is expected to release its long-awaited OSI-based DECnet (also known as Advantage) for VMS in the next couple of weeks. One user said he would just as soon stick with the proprietary DECnet Phase IV except that his network is running out of addresses and the OSI version provides virtually unlimited addressing.

Couldn't be faulted for selling

As fault-tolerant vendor Sequoia Systems struggled with a management shuffle and financial problems, rumors multiplied that the company could soon to be acquired by Hewlett-Packard. HP owns 8% of Sequoia's stock and remarkets Sequoia's systems. Internal sources at Sequoia confirmed that such an acquisition is likely before the end of the year, a statement that was denied by spokesmen at both companies.

Shades of Dan Quayle

If you look closely at OSI documents put out by the International Standards Organization, you will notice that *routing* is spelled *routeing* every time. No, Dan Quayle did not write the ISO's documentation; the story is that one version of the Oxford English Dictionary had the misspelling, and by the time the mistake was corrected, the ISO had already adopted that version of the word as gospel.

Is your aching back helping you forget about your carpal tunnel syndrome? Computer ergonomics resource centers such as Chicago's Backcare Corp. have latched on to the Computer Health Break from Escape Ergonomics in Sunnyvale, Calif. Computer Health Break is a 16K-byte terminate-and-stay-resident program that will pop up on-screen at user-specified intervals and run through several exercises from a list of 70. The product runs on IBM and compatible PCs with DOS 3.1 or higher and costs $79.95. A caveat if your problem is deeply ingrained: The product only helps prevent stress-related body dysfunction; it doesn't cure it. Cure News Editor Alan Alper's need for news tips. Phone, fax or CompuServe him at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

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COMPUTERWORLD

Downsizing pushes IBM DBMS revamp

Distributed DB2, AIX systems to debut in spring

BY JOHANNA AMBROSIO and MARYFRAN JOHNSON
CW STAFF

SANTA TERESA, Calif. — IBM will attempt to shore up its position in the database market with a spring announcement of its overdue AIX database manager and a major oew versioo of DB2.

Yet whether IBM's defensive database strategy can turn the downsizing tide to its advantage is likely to be a critical question in 1993, observers said. Many industry watchers said they believe IBM has waited too long to catch all but the most dedicated IBM customers who are leaving their mainframe-based software behind.

Among the announcements expected in the May time frame are Version 3.1 of DB2, which will allow mainframes to distribute database processing among several differeot machines, and IBM's first foray into the AIX database world.

The AIX software, as yet unnamed and based at least partly on the database manager in OS/2 Extended Edition, will be delivered about a year later than IBM originally planned. Likewise, Version 3.1 of DB2 will not be delivered until 1994, sources said.

Users already in production with an Oracle Corp. or Sybase, Ioc. database manager on their RISC System/6000s are unlikely candidates for the AIX database. Sybase, however, will offer a competing view of distributing databases across the enterprise

Continued on page 14

PRODUCT EVALUATION
USL's Unix V 4.2 (Destiny)

NEW PRODUCT IN-SITE

Easy PC Unix

Unix System Lab's Unix System V Release 4.2 for Intel architecture PCs scored above expectations in ease of use but only about average in performance on the 486, and below par on the 386

(See New Product In-Site, page 40)

Ease of use	4.8
Ease of installation	4.5
Reliability	4.5
Ease of conversion	3.3
Performance	3.0

Ratings are based on a scale of 1 to 5, where 1 is below expectations and 5 is above expectations

Launch links ISDN 'islands'

BY JOANIE M. WEXLER
CW STAFF

RESTON, Va. — In keeping with the current spirit of political change, there is a chance that the tired definition of ISDN as "I still don't know" could metamorphose next week into "It's starting delivery now."

The long-anticipated first-phase launch of a oationwide Integrated Services Digital Network will represent links of many heretofore ISDN "islands."

This means organizations restricted by the current limited geographic availability of ISDN's dial-up, single-circuit voice, data and video service will see their potential with the technology expand significantly.

ISDN could solve a range of networking problems while emerging technologies such as frame relay and Switched Multimegabit Data Service suffer from some of the hurdles ISDN faced. Although high-speed SMDS handles voice and video well, for example, it is in the "island" stage right now.

And while packet-oriented frame relay is fairly ubiquitous, it falls short in the area of voice and video, analysts said.

For the celebratory kickoff of the National ISDN-1 public-switched digital network — dubbed Transcontinental ISDN Project '92 — 70 companies using ISDN in nearly 150 locations worldwide are hosting ISDN open houses all week to allow would-be users to view their live ISDN applications.

Many of the open house host companies said the value they are finding in ISDN is twofold: cost savings through piggybacking data and video-oriented applications on top of telephone service,

Continued on page 10

Brave new world

More than half of U.S. network access lines are slated to be ISDN-accessible by 1994

Percentage of lines planned to be National ISDN-1-accessible

	1992	1993	1994
Ameritech	24%	51%	70%
Bell Atlantic	49%	58%	87%
BellSouth	25%	41%	52%
Nynex	16%	24%	31%
Pacific Bell	44%	57%	69%
Southwestern Bell	16%	19%	21%
US West	36%	54%	59%

Source: Bellcore — CW Chart: Michael Siggins

WHERE EAGLES DARE

CIM worries don't stall USAF overhaul

BY ELISABETH HORWITT
CW STAFF

The U.S. Air Force Materiel Command is nearing the mop-up phase of a massive multiyear campaign to consolidate, modernize and centralize the informatioo systems that support weapons systems throughout the Air Force.

However, many of the fruits of this Herculean labor may well be subsumed by Corporate Informatioo Management, a series of U.S. Department of Defense-wide initiatives that are expected to consolidate and standardize computer systems

Continued on page 20

At A Glance

U.S. Air Force

Postmerger look at combined Systems and Logistics Commands



Paul Skalnsky, assistant deputy chief of staff

Size of IS department: About 300 at headquarters and field operation agencies.

Annual budget: 52% of total Air Force budget, $52 billion; IS budget (excluding personnel salaries): $425 million.

Number of employees: 126,000 (military and civilian).

Number of sites/bases served: 14 bases, each of which has a computer/communications director.

Source: U.S. Air Force — CW Chart: Michael Siggins

Justice widens probe into IBM/ISSC tie

Akers orders look into Big Blue's compliance with 1956 Consent Decree

BY MARK HALPER
CW STAFF

WASHINGTON, D.C. — A lingering charge that IBM's outsourcing business violates antitrust grounds is gaining attention. While the U.S. Department of Justice escalates its investigation, IBM is conducting its own probe under orders from Chairman John Akers.

The Justice Department's case has risen from the staff attorney level to the hands of antitrust Deputy Assistant Attorney General Mark Gidley, who, according to one industry executive, had given IBM until last Friday to respond.

Action could range from dismissing the case to moving forward with civil or criminal charges. The allegation, however, is one that has weighed on the minds of users wondering about the long-term efficacy of an IBM outsourcing deal.

"Our clients say, 'Is there a concern here that [IBM] may be out of the business?,' " said Robert Zahler, a partner at Shaw Pittman Potts & Trowbridge, a Washington, D.C., law firm that negotiates outsourcing contracts. "We tell them [IBM] responds that this is not a concern."

At issue is whether IBM's outsourcing practice breaches a 1956 Consent Decree in which the Justice Department ruled that IBM could engage only in the service bureau through a sep-

Continued on page 12

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INSIDE



Andy Freeberg

Wells Fargo's Roy Cumbia champions the bank's move to client/server computing. Page 6.

DEC's Robert Palmer confirms a plan to establish a separate PC unit. Page 4.

Del Monte, Hertz talk outsourcing with EDS and IBM, respectively. Page 14.

EXECUTIVE BRIEFING

November 9, 1992

A COMPREHENSIVE GUIDE TO THIS WEEK'S NEWS

RE-ENGINEERING

AIR FORCE MATERIEL COMMAND is in the throes of major IS consolidation and modernization projects that it hopes will be adopted as "best in class" prototypes for broader, Defense Department-wide modernization and downsizing efforts. However, DOD projects could supersede Materiel's work. *Page 1*



COLUMBIA UNIVERSITY'S Mike Marinaccio says constant user involvement is the key to a five-year re-engineering project that ties together the school's 15 colleges with client/server, imaging and TCP/IP technology. Also included is an outsourcing relationship with **American Management Systems.** *Page 71*

COMPAQ COMPUTER founder Rod Canion, who now heads a consulting firm, warns companies tackling re-engineering to be careful not to give too much control to outsourcing vendors. *Page 73*

TELECOMMUNICATIONS

WHILE THE INDUSTRY now knows ISDN will never be networking nirvana, next week's kickoff of the first phase of nationwide ISDN has users citing many viable uses of the digital telephone infrastructure finally starting to take shape. *Page 1*

USERS GAIN a little help with telecommunications planning from the heads of the **ATM Forum, Frame Relay Forum** and **SMDS Interest Group** at **Interop '92.** *Page 49*

DBMS

IBM WILL ATTEMPT to shore up its position in the database market with its overdue AIX database manager and a major new version of DB2. *Page 1*

CINCOM SYSTEMS revamps its Supra database management system to run under Unix and PC LANs in an attempt to play in the distributed world. *Page 15*

LEGAL ISSUES

CHARGES THAT IBM'S outsourcing business violates antitrust regulations are back in the spotlight, as the **Department of Justice** ramps up its investigation and IBM conducts its own probe as ordered by chairman John Akers. *Page 1*

ANTIDUMPING TARIFFS against Korean dynamic random-access memory should not raise prices on U.S. products, but small vendors and end users may have to shop carefully. *Page 97*

AN IBM SUIT stemming from the discovery of counterfeit cards in IBM 3174 controllers should serve as a warning to users to be certain their systems contain legitimate parts. *Page 60*

LARGE SYSTEMS

DEC OFFERS MORE flexible licensing to pave way for Alpha adoption by users. *Page 4*

DEC PRESIDENT AND CEO Robert Palmer preaches profitability through reorganization and service focus. *Page 4*

OUTSOURCING

▶**Del Monte** signed over its entire IS operation to **EDS** in a 10-year, $150 million outsourcing deal, reversing an earlier decision to keep control of its systems. *Page 12*

▶**Hertz** confirms earlier reports that it plans to outsource some of its computer operations to IBM's **ISSC** subsidiary. *Page 12*

CLIENT/SERVER

▶**Phelps Dodge** mines application development technology to position itself for client/server computing. *Page 65*

▶The move to client/server computing has been paved with a few pleasant surprises for **Actmedia.** *Page 43*

▶**Wells Fargo Wholesale Services** makes its first moves toward client/server after overcoming entrenched IS resistance. *Page 6*

▶**Sybase** is expected to outline a wide-ranging product plan for next year to alert IS managers to new client/server technology. *Page 14*

▶**Oracle** tried to get closer to Microsoft Windows users last week by uncorking Oracle Glue. *Page 14*

SOFTWARE

▶Industry pundits have mixed views on the recent **CA/Citicorp** flat-fee, enterprise software licensing agreement and its effect on future licensing practices. *Page 59*



▶**GM, Ford, Alcoa** and other heavy hitters are delving into desktop manufacturing. The process — going from CAD data to a part in just hours — can reduce product development cycle time and costs by up to 95%. *Page 77*

▶Warehouse management and logistics is a hot application area as manufacturers upgrade old systems. *Page 59*

▶Preprogrammed software agents are helping companies to accomplish tasks such as automatically responding to customer inquiries. *Page 62*

ENTERPRISE NETWORKS

▶**The Pacific Stock Exchange** would like to leapfrog most emerging high-speed networking technologies next year and leverage Asynchronous Transfer Mode to create a "virtual trading floor." *Page 16*

▶Users like **Legent's** host-based LANSpy product but say centralized LAN management does have drawbacks. *Page 49*

▶Researchers have to be thinking about how the high-speed networks of the future will change the computing infrastructure. *Page 28*

This is the last issue of *Computerworld* you'll ever see — in this format. Stay tuned for our new look next week.

APPLICATION DEVELOPMENT

▶Developing for NT isn't much of a chore — if you already know Windows. *Page 65*

▶**Coca-Cola Enterprises** takes a PC-based decentralized approach to developing new production and materials planning applications. *Page 65*

▶CA last week showed its Aspen development tool at CA Technicon '92. *Page 8*

▶**Slate** ships tool kit for building pen-based programs. *Page 66*

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▶The latest version of **USL's** Unix System V Release 4.2 scores well in user evaluations on the Intel 486 platform, but it is reportedly too slow on the 386. *Page 40*

▶**Sequent** positions its Symmetry line of Unix systems as a database server in both stand-alone client/server and mainframe coexistence schemes. *Page 62*

PC HARDWARE

▶**IBM** acknowledges that the PS/ValuePoint may take sales from the PS/2 line but says that's fine as long as people keep buying Blue. *Page 35*

▶**Cyrix's** upgrade to turn a 386 into a 486 draws corporate interest. *Page 8*

▶Users welcome the 486SL, despite industry grumbles. *Page 8*

▶Portable computers make their mark at **Eaton Corp.**, drawing kudos from even the general manager. *Page 37*

MANAGEMENT

▶At **Corning,** CIO Harvey Shrednick says it is time to do what he is asking managers and supervisors to do — reshape his operational mode from controlling, managing and directing to mentoring, coaching and delegating. *Page 33*

▶A recent study has found that small centers have suffered the most from cuts in staff and spending. The study notes that IS shops have found legitimate efficiencies in storage and other areas. *Page 62*

▶Vendors often say 'We can't do that' during deal negotiations. But if you haven't heard a 'no' when doing a deal, you've left something on the table. *Page 90*

▶IS managers who shy away from spending $10,000 for a VDT ergonomics study may want to consider a new $300 service. *Page 74*



▶If you feel your job is getting stagnant, perhaps you should look at what you do in your free time. It could have a real impact on your job success. *Page 83*

▶Think it's easy being married to an IS professional? Think again. How many other people computerize the signing and sending of their Christmas cards? *Page 33*

GROUPWARE

▶Will IS management string garlic around its doors when workgroup software comes a-knocking? Editor-in-Chief Bill Laberis says it could be a case of deja vu all over again. *Page 32*

▶**Lotus** ditches plans to merge its CC:Mail electronic mail and Notes groupware software packages. *Page 43*

▶Meanwhile, the question arises whether **Lotus** needs to redesign Notes for the long haul. *Page 43*

▶**DEC** is bringing its Network Application Support environment to Sun platforms in hopes of bridging the DEC and Sun worlds. *Page 44*

Storage

• Researchers are experimenting with high-capacity data storage techniques that use laser beams to read data — much like a phonograph. ..... Page 28

LANs

• Start-up **MicroAccess** in San Jose, Calif., is first to market with LAN hardware for 100M bit/sec. transmission. The announcement fell a week before today's IEEE meeting to discuss developing standards. ..... Page 16

• A graphical LAN-based electronic software distribution system promises to help save companies thousands of dollars in software installation costs. ..... Page 52

• **Novell** has announced new versions of its LAN WorkPlace for DOS Unix terminal emulation package. .. Page 44

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E-mail

• Mail interconnectivity vendor **SoftSwitch** forges ahead with building enterprise links. ..... Page 54

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PC software

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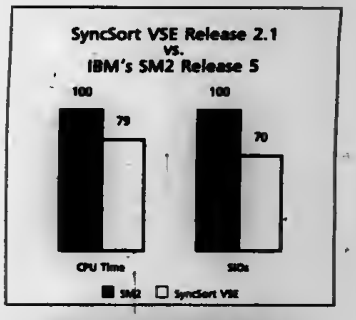
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DEC restructuring plan includes separate PC unit

BY MELINDA-CAROL BALLOU
CW STAFF

BOSTON — Digital Equipment Corp. President and Chief Executive Officer Robert Palmer confirmed last week that DEC will be reorganized around vertical and horizontal business units, including one dedicated to PCs.

The company is resolving details for eight to 10 business units, each with its own profit and loss responsibility [CW, Nov. 2]. The specifics will be made public before year's end.

"In the case of the PCs, it's a well-defined unit — they aren't manufacturing anything else," Palmer said at the company's annual meeting.

"DEC's PC business has caught fire this year, growing from 2% to 3% to close to 10% [of DEC's overall revenue] — generating sales if not profits," said Peter Kastner, vice president at the Aberdeen Group, a market researcher in Boston. It is unclear how profitable DEC will be in the face of "suicidal" price cutting.

All the business units would be serviced by horizontal product and service groups within DEC, assuming that those groups "are competitive"; if not, the units could go outside of DEC for products and services, Palmer said.

DEC's ability to service PC products nationwide under a single contract was a plus, but "DEC in the past was unable to respond quickly to PC market changes," said Gary Hensley, manager at Basic American Foods. "We're hoping they will be able to do so [with the new business unit]."

Microsoft to link Notes to its Mail

BY ROSEMARY CAFASSO
CW STAFF

BELLEVUE, Wash. — In a quest to become an enterprisewide mail provider, Microsoft Corp. is even pulling rival Lotus Development Corp. and Lotus' Notes workgroup package into its plans.

Microsoft last week disclosed that it is working with a small third-party company to develop a gateway to link Microsoft Mail with the mail component of Lotus' Notes. The gateway has not been beta-tested, although Microsoft and its partner, Phoenix Systems in Arlington, Va., expect it to be available early next year.

According to interviews with several Notes users last week, the initial market for the Microsoft Mail-to-Notes gateway may be limited. Some Notes users either do not have Mail installed or use other tools to link various electronic-mail systems together.

How many users?

There are about 1.7 million Microsoft Mail users and 150,000 Lotus' Notes users, according to "Electronic Mail & Micro Systems," a bimonthly newsletter published in Washington, D.C. However, Lotus estimated that its Notes installed base is closer to 225,000.

"My sense is that there are probably a select few who will find this really interesting," said Kevin Brown, president of the Boston Notes Users Group.

The Chase Manhattan Bank NA, for example, has several mail systems, including Microsoft Mail, but is currently linking them with Soft-Switch, Inc.'s mainframe-based connectivity software.

"We don't need it," Michael Mandelbaum, a vice president at Chase, said of the Microsoft gateway. "We don't need a direct connect."

Industry analysts said Microsoft is promoting the gateway to help further its image of linking Microsoft Mail to most other mail systems.

"It's important for Microsoft to do the politically correct thing," said Krystyna Filistowicz, director of business applications research at Dataquest, Inc. in San Jose, Calif.

Connection important

Bill Sornsin, a Microsoft product manager for Mail gateways, said the company had "not come across enough Notes installations in general ... but it is still important. It doesn't matter if you have five users or 5 million users. If people can't talk, it's important that we connect with them."

Lotus, meanwhile, was at first miffed that it was not included in Microsoft's announcement because it had worked with Phoenix Systems also.

"It would have been appropriate for them to have included us as well," said Arlene Greene, director of business development for Notes. "The issue here is this is a customer-driven product [from] people with Microsoft Mail who are adopting Notes."

John Casey, director of the advanced systems group at Phoenix Systems, said "the reason [the announcement] seemed slated toward Microsoft is they volunteered to co-fund" the development.

Alpha line ready to roll

Company's software licensing offers easier migration to new line

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. last week shifted its licensing practices to make it easier for users to maintain their technology investments when migrating from VAXs to the new Alpha systems, which officially debut tomorrow.

The new software licensing makes it possible to move applications that run on a single operating system across different hardware platforms. Previously, users would have to change and pay for new licenses if they switched platforms.

"You can move between hardware platforms at will, as long as you maintain the same number of users," said Mary Welch, marketing manager for DEC's corporate business practices group. "If you want to configure a cluster differently, [by] incorporating Alpha boxes, for instance, you can."

Range of systems

Users said this shift in licensing practices will make it easier to purchase Alpha hardware but probably will not prove decisive for those who were not already committed to Alpha.

"This [cross-platform licensing] is potentially a differentiating factor for DEC, but whether it is sufficiently [so] to win business that DEC would otherwise not have gotten is a real open question," said Bill Mayhew, a chairman at the Digital Equipment Computer Users Society.

DEC's Alpha platforms range from the low-end desktop and deskside systems DEC 3000 Models 400 or 400S AXP and Models 500 or 500S AXP, with workstation and server options, to the high-end DEC 10000 AXP mainframe (see chart).

A raft of software products, applications, tools and networking software from third parties and from DEC are also expected to be immediately available.

While Hewlett-Packard Co. and Sun Microsystems, Inc. are also scheduled to announce Unix workstation products tomorrow, DEC's broader strategy with Alpha allows multiple operating systems to run on the company's 64-bit reduced instruction set computing architecture — Open VMS, the Open Software Foundation's OSF/1 and Microsoft Corp.'s Windows New Technology (NT), when Microsoft ships NT next year.

Except for the DEC 10000 AXP mainframe, the systems will be immediately available running Open VMS and developer's versions of OSF/1.

Mixed options

Of 14 DEC sites contacted by *Computerworld*, five were ready to order boxes, eight were waiting to evaluate, and one was opting for a DEC competitor.

"We're very interested in Alpha both as an upgrade path for VAXs and as a platform for NT in the future," said Stanley Rose, a vice president at Bankers Trust Co., a commercial bank in New York.

"We will begin osing one for basic number-crunching immediately but will wait for full VAXcluster support before moving over our production data," he said.

Alpha's arrival is too late, however, for Bill Gipps, who is manager of technical and customer support at Labatt Breweries of Canada Ltd.

Alpha, beta — go

DEC's Alpha line is ready at last. A smorgasbord of what's on tap:

Model	Pricing**	Memory	SPECmarks
	$15,000	128M bytes	110
	$77,000	512M bytes	135*
	$168,000	2G bytes	165*
	$316,000	2G bytes	NA

The DEC 4000 AXP offers one or two processors; DEC 7000 AXP and DEC 10000 AXP offer one to six processors. All systems except the DEC 10000 AXP will be available this week on Open VMS and in a developer's version for OSF/1; end-user OSF/1 versions for all systems and the DEC 10000 AXP will be available by the end of the first quarter, 1993.

*single processor; **approximate

CW Chart: Stephanie Pandori

"It's pretty exciting that they've got boxes running that fast, but we're not seriously considering them," Gipps said. "They're not shipping the software that I need to use right away, and we have short-term, immediate concerns which we must meet. It would have been better if they had been here six to 12 months ago." He declined to specify which system he is choosing instead.

The majority of users are interested but waiting to see what the systems offer.

"We're probably not as anxious as some people for the performance benefits of Alpha since we're not that large of an operation at the moment," said Gordy Hunt, systems operation manager at Crane Plastics, based in Columbus, Ohio. "But Alpha is the way DEC is moving, and we will ultimately move with them," Hunt said.

Babcock joins CW as technical editor

FRAMINGHAM, Mass. — *Computerworld* has appointed Charles Babcock to the newly minted position of technical editor.

Operating out of the Burlingame, Calif., office, Babcock will boost *Computerworld's* efforts to identify and report on the most pivotal technologies shaping the information systems environment. Babcock's role will put him on the road every week, traveling to bellwether user sites, information technology vendors, conferences and trade shows.



Charles Babcock *was* Digital News' *editor in chief*

"Charlie will become an information sponge, soaking up the relevant trends and technology directions and reporting his findings to the editors here," said Bill Laberis, editor in chief of *Computerworld*. Babcock will also write a weekly technology column.

Babcock most recently was editor in chief of *Digital News*, a position he held for the past four years. Prior to that, he worked at *Computerworld* as Mid-Atlantic correspondent, senior software editor and assistant news editor.

He also worked for several daily newspapers prior to his trade press experience.

"Charlie is a journalist of first-rate integrity and quality, and we couldn't be more happy to have him back on staff," Laberis added. "He has that perfect blend of curiosity, instinct and technical understanding that this job will demand."



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NEWS SHORTS

WordPerfect upgrade set to ship

WordPerfect Corp. plans to ship WordPerfect 5.2 for Windows at the end of this month. The upgrade includes Reference Software International's Grammatik 5 grammar checker and support for Adobe Systems, Inc.'s Adobe Type Manager. Other features include 13 new WordPerfect fonts, a quick indexing and text-retrieval feature, electronic-mail capabilities, new macros and support for Object Linking and Embedding. Existing users can upgrade for $39.95.

Eo pen systems target mobile users

Eo, Inc. in Mountain View, Calif., last week announced the 2.2-pound Personal Communicator 440 and the 4-pound Personal Communicator 880. Measuring 8 ½ by 11 in. or less, the devices have fax, E-mail, cellular phone and computing capabilities in one small package. Go Corp.'s PenPoint operating system and nine applications are bundled into read-only memory. Prices start at $1,999 with shipments due in the first half of 1993.

Microsoft ships Win32S interface

Microsoft Corp. said last week the Win32S application programming interface (API) shipped with the October beta-test release of the Windows New Technology (NT) software development kit. Win32S allows programmers to write applications that take advantage of Windows NT's 32-bit properties but still run on Windows 3.1. However, Windows NT developers who were contacted said the API is too late for them to use it.

Virus detection goes on a chip

Western Digital Corp. will today unveil a microprocessor-based technology that it claims will alert users to the presence of computer viruses on 386- and 486-based PCs. Immuniser takes control of write-protect operations over hard disk areas containing the executable code to which viruses typically attach themselves and monitors the disk for suspicious activity.

Desktop standard proposal issued

The Desktop Management Task Force (DMTF) has distributed a draft specification of its API architecture to participating members and hopes to release a free reference document to the public at the Interop '93 Spring show. The DMTF is a consortium of more than 40 vendors that formed earlier this year to address desktop management issues. The draft Desktop Management Interface is said to define management links for video cards, network interface cards, fax modems, storage devices, application software and operating systems.

IBM, Harris eye federal market

IBM and Harris Corp. in Melbourne, Fla., last week announced an alliance aimed at federal customers under which they will develop real-time functions for the IBM RISC System/6000 line of Unix workstations and servers. Harris will also incorporate the upcoming PowerPC architecture into its Night Hawk line of highly secure, real-time systems.

Short takes

Cyrix Corp. is expected today to announce a processor that is plug-compatible with Intel Corp.'s 1486SX and outperforms Intel's fastest 33-MHz version of that chip. The CX486S2/50 is the first in a family of pin-compatible 486 imitators Cyrix intends to produce.... Lotus Development Corp. started shipping an upgraded release of 1-2-3 for the Apple Computer, Inc. Macintosh last week. Ease-of-use improvements in Release 1.1 include an automated installer that allows users to launch the application with a series of mouse clicks.... Apple subsidiary Claris Corp. is slated to unveil its second product for the Windows market tomorrow. ClarisWorks for Windows is an integrated package that last year stole the top position in the integrated software category from Microsoft's Works.... Concurrent Controls, Inc. in San Francisco signed an agreement with Novell, Inc. to develop and distribute Novell's DR Multiuser DOS product line, which enables many users to share a single DOS-based PC.

More news shorts on page 16

Bank eschews client/server risk

Wells Fargo's wholesale unit expects 10-to-1 price/performance benefits

BY ELISABETH HORWITT
CW STAFF

SAN FRANCISCO — The success of a client/server risk management application that recently went into production at Wells Fargo Wholesale Services will have a major impact on future rightsizing plans within the business unit and indeed the entire bank, spokesmeo said. First, bowever, the unit's chief rightsizing champion, Senior Vice President Roy Camblin, had to persuade veteran information systems managers to let go of their mainframe bias.

Wholesale Services officially went client/server in August, when a client/server risk management system running Oracle Corp. database software on Unix-based Sun Microsystems, Inc. workstations went into production.

The application, which may be the industry's first automated risk management system, has so far met expectations in reducing risk because of customer default and bad debt — a hot button for federal regulators — and in realizing price/performance benefits on the order of 10-to-1, according to Alan Holroyde, the unit's group chief.



Andy Freeberg

Wells Fargo's Roy Camblin *gave client/server pep talks to resistant mainframe-minded IS managers at the bank*

Big breaks

Major cost savings are expected from the unit's ability to offload and thereby prolong the life of depreciated hosts, eliminating the need to regularly move up to IBM's current top-of-the-line model, Camblin noted.

Client/server systems will also help the bank realize 10-to-1 improvements, at a minimum, in areas such as programmer productivity, Camblin estimated. "Payback in a matter of months, not years, is expected," he added.

Indeed, no incremental budget has been allocated to the client/server systems; they are expected to pay for themselves by offsetting the costs of mainframe CPU cycles, which the unit buys from Wells Fargo's internal service bureau, Camblin explained.

Wholesale Services is far from throwing out its IBM mainframes. A key component of the risk management application is Oracle SQL software that permits users to transparently track commercial customers' financial activities throughout the day across multiple product databases, many of which are still housed on legacy mainframe systems, Camblin said.

"A risk management success would certainly argue for the Oracle/Sun partnership" supplying platforms for other re-engineering efforts now in the works, Holroyde said. "Highly likely" candidates include a business account customer service system, which is scheduled to begin rolling out early next year, and wire transfer and automated clearing-house systems scheduled for completion in late 1993 and early 1994, Holroyde said.

A client/server success would help Camblin break down the last resistance of mainframe-minded IS managers, he said. "IS managers told me, 'If it ain't broke, don't fix it.' I said, 'As good as we are at what we're doing now, it won't get us to where we need to be three years from now.'"

Until recently, IS veterans who have logged an average of 16 years at Wholesale Services have fiercely resisted moving to a strange environment where their CICS and Cobol programming skills would be virtually useless, Camblin said.

IS managers learned the new system by implementing it, Camblin said. About half of the department has been fully trained on the risk management system, and the other half will come up to speed as the department implements other client/server applications now in the works. Even those maintaining legacy mainframe systems are learning by doing Cobol programming on a networked Sun workstation.

Still mainstream

Camblin has already given a series of client/server pep talks to TSO Cobol VSAM programmers. "They told me, 'This is a conservative bank; we don't want to be on the bleeding edge.' I said, 'We won't be bleeding edge, just early implementors.'"

Far from leading the pack on distributed computing, Wholesale Services will just be moving in step with competitors that are already implementing client/server applications, industry analysts said.

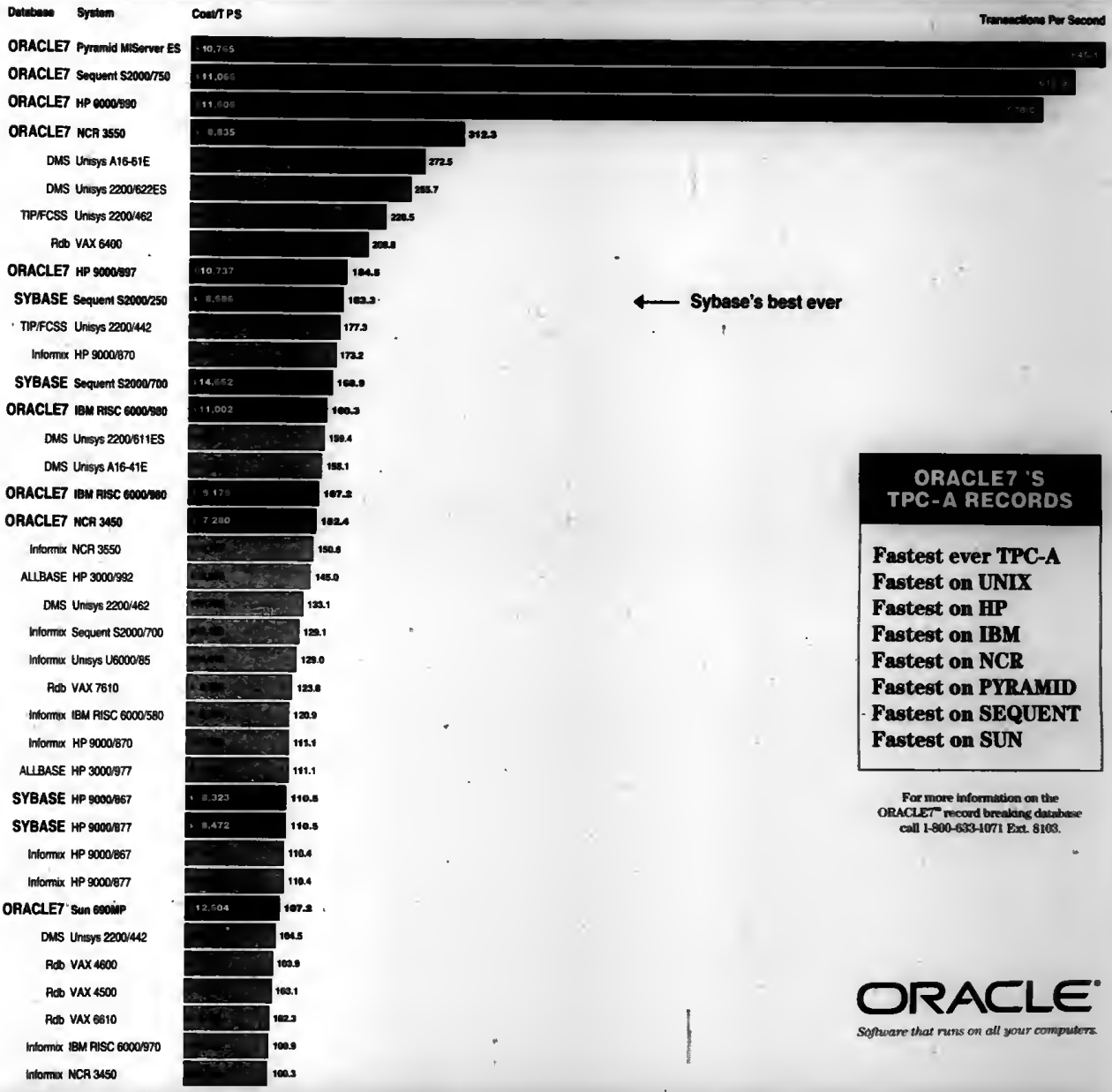
A recent report by Ernst & Young's Center for Information Technology and Strategy estimated that 45% of commercial banking companies currently have at least one major transaction processing application running in productioo mode on a distributed computing platform. That number will increase to 74% in 1995, the report projected.

Wholesale service applications make up the bulk of banks' client/server applications, according to Ladd Willis, an executive vice president at First Manhattan Consulting Group. Transaction-intensive core applications in the retail business, whicb handle individual customers, are still considered too bulky for client/server technology, Willis said.

> TRIED AND TRUE methods "won't get us to where we need to be three years from now."
>
> ROY CAMBLIN
> WELLS FARGO

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486SL chip invades notebooks

Intel's chip to appear in systems from Compaq, AST, NEC and others

BY MICHAEL FITZGERALD
CW STAFF

SANTA CLARA, Calif. — Intel Corp.'s new i486SL chip will soon appear in notebook computers from vendors such as Compaq Computer Corp., AST Research, Inc. and NEC Technologies, Inc., despite an industry that questions whether the chip will live to see another generation.

The new 25-MHz 486SL, expected today, gives users a 486DX-class processor that runs at 3.3V and uses System Management Mode, which combine to help generate a 25% longer battery life than the current 80386SL power management chip. Compaq and AST claim three and 6 ½ hours under normal use, respectively.

Compaq is now shipping the 4/25C, while AST expanded its PowerExec line with six new models. Both vendors offer active-matrix color screens and up to 200M bytes of storage. AST also has passive-matrix color and monochrome versions.

NEC will today announce its Ultralite Autograph pen-based system, which uses the 486SL and is slated to ship in January.

Users contacted generally gave an enthusiastic reception to new 486SL-based notebooks.

"We've been waiting for these products," said W. B. Soper, manager of information services at Chevron Canada Ltd. "Our new sales system is a client/server application, and we need quite a bit of processing power on the front end." Soper said Chevron has stopped buying 386-based systems. Because Compaq, Chevron's main PC supplier, has not had a 486-based notebook, Soper welcomed its product.

Compaq also introduced the LTE Lite/25E, a 386SL-based notebook with a twist: It has a high-resolution, active-matrix monochrome screen. This makes the display far brighter and easier to read than an ordinary monochrome screen. Apple Computer, Inc. is the only other company to use an active-matrix monochrome screen on a notebook.

Numerous other vendors announced support for the 486SL, although sources at some major OEMs said Intel has upset many vendors because it plans to make 3.3V, power management-capable versions of all of its 486 processors. Vendor sources said they see this giving an advantage to Toshiba America Information Systems, Inc. and Texas Instruments, Inc., which have invested heavily in power management software.

Still, the SL has integration features other Intel chips lack, and even the most disgruntled OEM source acknowledged that defections from Intel are unlikely, despite a new Cyrix Corp. CX486-SLC/E, a 16-bit chip with System Management Mode and 25% lower power consumption than existing Cyrix chips.

One analyst downplayed these squabbles. "The 486SL will have demand for quite a while," said Tim Bajarin, president of Santa Clara, Calif.-based Creative Strategies Research International, Inc.

Powerful savings

Intel's 486SL power saving chip will appear in the following vendor's systems.

	Compaq notebook	AST notebook	NEC pen-based
CPU	486SL (25MHz)	486SL (25MHz)	486SL (20MHz)
Display	Active-matrix color	Active-matrix color, passive-matrix color or monochrome	Monochrome
Storage	120M byte or 210M byte	80M byte to 200M byte	40M byte or 80M byte
PCMCIA	No	Yes, 2 slots	Yes, 2 slots
Weight	6.5 pounds	5.9 pounds (mono) 6.9 pounds (color)	3.9 pounds
Battery life	Up to 3 hours	Up to 6.5 hours	Up to 5 hours
Base price	$4,099	$2,795 (mono), $3,595 (passive), $4,495 (active)	$3,999 or $4,099
Available	Now	December	January

CW Chart: Michael Siggins

Lotus to Improv for Windows

BY ROSEMARY CAFASSO
CW STAFF

BOSTON — After months of sneak previews, Lotus Development Corp. is scheduled to officially unveil Improv for Windows, its advanced spreadsheet for modeling and analysis, at a meeting of the Boston Computer Society tonight.

"I've put it in the category of potentially valuable," said Joseph Caruso, director of corporate systems and technology at American Express Co. in New York. "It appears to be a leap in effectiveness in terms of modeling and analysis. It isn't restricted to the row and column format."

While Lotus is expected to use tonight's pre-Comdex/Fall '92 event to launch Improv, the software is not yet ready for volume shipment, sources said. However, Lotus had previously committed to ship Improv by year's end.

Must move cautiously

Improv for Windows is a redesign of the original version, which was built for Next, Inc.'s platform. Analysts said Lotus' positioning of the product is critical for it to avoid confusing potential buyers or detract from the still shaky 1-2-3 for Windows business.

"They have got to differentiate it from 1-2-3," said Stuart Woodring, director of software strategy research at Forrester Research, Inc. "If it hits the market and users are left scratching their heads saying, 'Why do I need this, I have 1-2-3?', then the product is in trouble."

Lotus has said Improv is a step up from spreadsheets because it allows users to change and recreate data quickly.

As well, users can work with English words when creating models instead of letters and numbers.

"I think there's a group of spreadsheet users that would take this in a second: the power users and those doing modeling, analysis, strategic planning and forecasting," said John Donovan, a senior analyst at WorkGroup Technologies, Inc.

While Improv may be the focal point of the Boston Computer Society meeting, Lotus is also expected to demonstrate 1-2-3 for Windows Release 2.0, which was supposed to ship by year's end but was recently delayed until early next year.

Release 2.0 includes initial implementation of Chronicle, workgroup technology that would enable a group of users to work on a spreadsheet, make changes and see those adjustments reflected as they work.

Cyrix lures Intel 386 users to upgrade to its 486 chip

BY MICHAEL FITZGERALD
CW STAFF

RICHARDSON, Texas — Cyrix Corp. has confirmed plans to roll out at Comdex/Fall '92 a program designed to persuade corporate users to upgrade from Intel Corp. 80386DX-based systems to upgrade-ready 486DLC chips from Cyrix [CW, Sept. 7].

The Cyrix CXDRU and CXDRU2 chips will let users upgrade existing 386DX systems simply by popping out the Intel chip and popping in the Cyrix chip.

Cyrix has set pricing near $300 per chip, which has attracted the attention of corporate users, several of whom said they plan to install the chips in their Intel-based systems.

"I am absolutely going to recommend that we buy them," said Eric Lafortune, regional computer coordinator at Unocal Corp.'s oil and gas division in Bakersfield, Calif. Lafortune said his tests showed engineering applications ran 80% to 100% faster with the new Cyrix chips.

"As far as I'm concerned, before we buy 486 systems we ought to upgrade to these for a lot less money," he said.

While Lafortune's division is looking at perhaps upgrading only 150 PCs, he said he would recommend the Cyrix chip to the corporate information systems staff.

Another IS manager at a major West Coast financial institution, who asked not to be named, said his division would buy 200 of the Cyrix chips and will add them to the list of acceptable corporate standards. Landing on corporate buy lists will give Cyrix the potential to sell thousands of upgrades.

Not convinced

Still, some users who have tested the chips remain skeptical.

"It's a great idea, but we need to see the results," said Jon Davies, systems programmer at Alberta Wheat Pool, a grain cooperative based in Calgary.

Davies said his company has 300 AT&T 6386s running Unix, and the Cyrix chip could increase their life span, saving the cost of buying new systems.

He said OS/2-based machines showed a 25% speed increase, which was not enough to justify upgrading them, but a similar increase for the Unix boxes would be welcome.

Cyrix also acknowledged that it was working on an SX upgrade chip, but because SX chips tend to be soldered directly on the motherboard, replacing them presents some "mechanical difficulties."

CA teases OOPs workbench

CA-Visual Objects offers extensions to Clipper

BY GARRY RAY
CW STAFF

NEW YORK — Computer Associates International, Inc. last week previewed a version of its object-oriented application development technology, formerly code-named Aspen.

The technology, which Chairman Charles Wang said will eventually be used in CA's Cobol and fourth-generation language products, was shown working with the company's Clipper database development language here at CA Technicon '92, the company's conference for the Xbase developer. Price and shipping dates for CA-Visual Objects were not available at press time.

As for its usefulness to Xbase programmers, "the specific implementatinn, syntax and semantics will take time to learn," said Marc Schnapp, an El Sobrante, Calif.-based consultant and acting chairman of the ANSI Xbase language standard committee. However, "this is the first time an Xbase vendor has extensively demonstrated a fully object-oriented dialect of the language," he said.

Islandia, N.Y.-based CA acquired Nantucket Corp.'s Clipper development tools for Xbase programming last June.

CA-Visual Objects for Clipper, the first implementation of Aspen, comprises a database development workbench and a compiler for Xbase programming.

In prepared remarks, Wang said the workbench "protects investments by promoting the reusability of code and the ability to wrap legacy code in [to] the new object-oriented model."

Simple to port

CA-Visual Objects also includes a number of object class libraries that support graphical user interfaces and database functions. The libraries are derived from the Glockenspiel CommonView class libraries, which CA recently acquired.

With these libraries, Wang said, "Aspen applications will easily be ported to new environments, including OS/2 [Presentation Manager] and Motif under Unix."

According to company officials, CA-Visual Objects includes the following features:

- Extensions to the Clipper programming language.
- Four class libraries for standard functions, databases, user interfaces and applications.
- A program repository with application and class browsers.
- An incremental Xbase compiler.
- An integrated development environment with program editors, screen painters and other tools.



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Launch links ISDN 'islands'

CONTINUED FROM PAGE 1

and the ability to accommodate far-flung users in today's increasingly mobile, telecommuter-oriented society.

"Being able to access a variety of applications simultaneously over a single network architecture is probably our primary benefit," said Lari Sue Taylor, a telecommunications consultant at the Federal National Mortgage Association (Fannie Mae) in Washington, D.C.

"We can use an ISDN line from one desktop to access several hosts because of its switched nature," she explained.

The U.S. Environmental Protection Agency (EPA) is using ISDN to interconnect local-area networks and is also investigating the technology to save money, said David A. Bittenbender, telecommunications branch chief at the agency.

"We're upgrading to ISDN telephones for voice service, and we're considering dividing ISDN's two 64K bit/sec. channels between two phones," he said. This way, the EPA would accommodate every two phones for 1½ times the cost of basic phone service.

However, he is also looking at ISDN as a way to bring IBM 3270 traffic, which is currently flowing to cluster controllers in eight different D.C. branches, to controllers in a single site to centralize maintenance. His alternative, he said, would be to dedicate fractional T1 lines from each location. Dedicated lines traditionally cost much more than switched service.

Another Trip '92 participant, Canon U.S.A., Inc. in Lake Success, N.Y., is investigating ISDN for telecommuting applications, said Ben Oliva, manager of telecommunications.

"The 1990 Clean Air Act means companies of over 100 employees are going to have to reduce the vehicular traffic going in and out of their facilities," he noted. In addition, "ISDN will bring some human resources quality to the woman who starts a family or someone who is physically impaired."

"National ISDN will enable my company to look at itself on a national basis for deploying different applications," said Mike Brophy, manager of network office systems at Quantum Chemical Corp. in Cincinnati. "By 1994, ISDN service should cover a large portion of where we have concentrations of people."

Extending client/server

Aside from his goal of giving remote users the same access to corporate information via ISDN as those physically closer to the computing resources, Brophy said he envisions ISDN as a way to "extend client/server applications into a customer/vendor relationship" by allowing the various companies' networks to temporarily blend when they conduct business.

The University of West Virginia has similar ideas. One of its vendors in California was recently able to bridge into a university LAN via ISDN to perform some troubleshooting "without Federal Expressing a disk or faxing a printout," said Jeff Fritz, telecommunications engineer at the university.

ISDN's bandwidth limitations are often seen as roadblocks to ISDN's promise of a single network architecture for delivering dial-up voice, data and video as simply as users make a telephone call today. However, Brophy said that to his surprise, his Microsoft Corp. Windows applications have not missed a beat across the currently 144K bit/sec. network.

Trip '92 is the culmination of an effort kicked off by the Corporation of Open Systems (COS) in February 1991. Prior to COS' taking executive action in bringing together equipment makers, software developers and network service and switch providers on a common ISDN specification, the industry was at an ISDN interoperability stalemate because of internetwork compatibility problems.

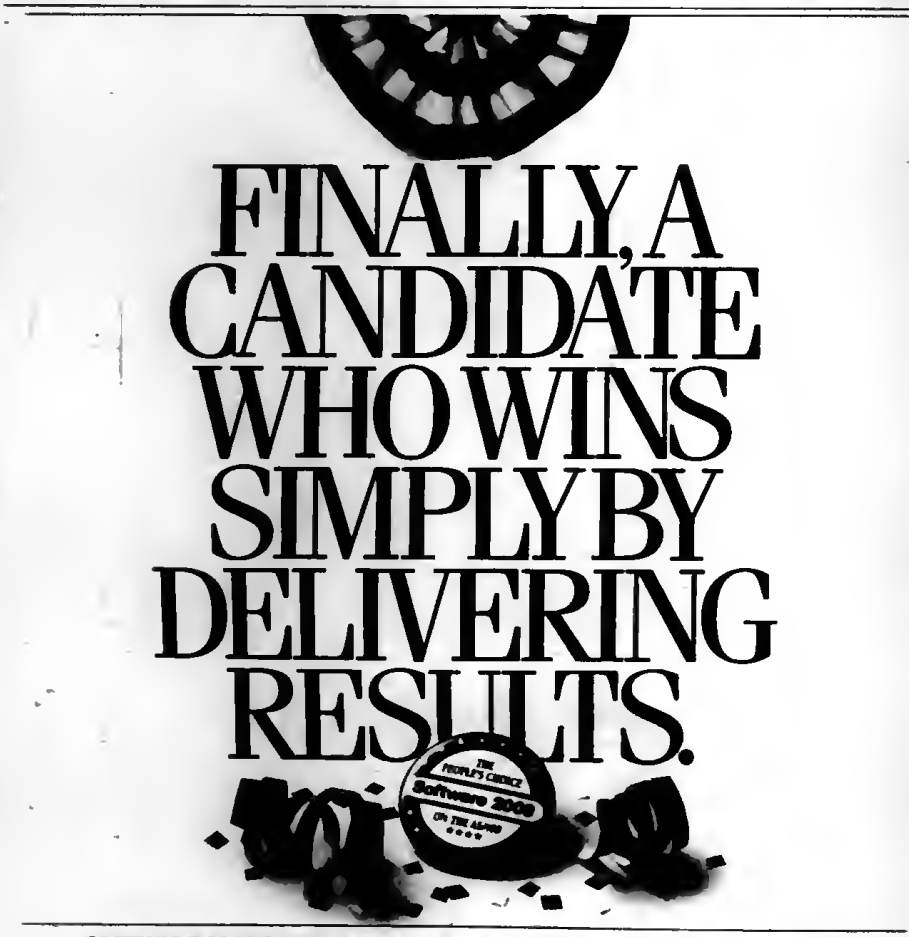
One service for all

National ISDN-1 means there are 22 standards-compliant central offices nationwide interconnected by a long-distance telephone company; 100 offices are planned by the end of the year. Other National ISDN characteristics include the following:

- Basic rate service only. Users get two 64K bit/sec. channels for voice, data or video and one 16K bit/sec. channel for transmitting management information or packet switching.
- Only AT&T and MCI Communications Corp. are up as long-distance ISDN interconnection carriers.
- Applications on display at nationwide open houses include image and file transfer, desktop- and video-conferencing, point-of-sale, LAN interconnection, telecommuting and Group 4 (fast, high-quality) fax.

When National ISDN-2 kicks in by late 1993, it will add the following:

- Primary rate (1.5M bit/sec.) service.
- Packet switching across the 64K bit/sec. channels.
- More than 56% of 115 million regional Bell operating companies network access lines with ISDN service by late 1994.



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Hertz talks with outsourcer

ISSC may selectively take on IS operations

BY MARK HALPER
CW STAFF

OKLAHOMA CITY — The Hertz Corp. last week began shedding light on its selective outsourcing plans, disclosing that it has entered negotiations to hand over some of its information systems operations to IBM's Integrated Systems Solutions Corp. (ISSC) subsidiary.

In a sketchy statement, Hertz confirmed earlier reports that it plans to outsource some activities to ISSC while leaving others in-house [CW, Oct. 5].

"Affected areas include selected IBM-based application development and all IBM computer operations and technical support" in Oklahoma City, the company stated. The company did not return phone calls asking for elaboration. An ISSC spokeswoman also declined to comment.

The company said some operations will be "unaffected" by outsourcing. Those include reservation systems operations, technical support and development, rates development, yield management development, European development, telecommunications, research and development and "other selected areas of IBM-based application development."

Hertz also characterized certain systems and support providers as "unaffected." Those are Hewlett-Packard Co., Tandem Computers, Inc. and Digital Equipment Corp. It did not mention Unisys Corp. on the "unaffected" list. Hertz runs reservations — which it described as an "unaffected" operation — on Unisys mainframes.

A Unisys spokesman said, "Our information is that our status is unchanged," but he found it "curious" that Unisys was left off the list of unaffected systems.

Hertz did not consult Unisys on the announcement, and Unisys had not received a copy of it as of late last week, the Unisys spokesman said.

Premier executives



More than 50 IS executives from the *Computerworld Premier 100* companies gathered in New York last week for an awards dinner honoring America's most effective users of information technology. Executives from the companies who finished first in their categories include:
Froot row (left to right): Burley Gayer, Helen Gipson and Liz Turner, Wal-Mart Stores, Inc. (retailing and wholesaling); William Delaney, The Boeing Co. (aerospace); Doyle Graham, Wal-Mart.
Back row (left to right): D. James Dull, Kimberly-Clark Corp. (manufacturing); Paul Gillin, *Computerworld*; Max Hopper, AMR Corp. (transportation); Gary Beach, *Computerworld*; Ken Nelson, Reader's Digest Association, Inc. (coosumer products and services); Patrick McGovern, International Data Group; James Zucco Jr., MCI Telecommunications Corp. (utilities); Charles Bowerman, Phillips Petroleum Co. (petroleum and chemicals); Charles Popper, Merck & Co. (pharmaceuticals and food); and Bill Laberis, *Computerworld*.

IBM, ISSC probe widened

CONTINUED FROM PAGE 1

arate subsidiary.

The same ruling — an agreement between IBM and the Justice Department's antitrust division — barred IBM from providing equipment to the subsidiary at lower rates than those it offers to competing service bureau companies.

The agreement addressed the concern that IBM could turn its dominance as a product supplier into an unfair advantage in the processing business.

Some outsourcing vendors, led by Dallas-based Affiliated Computer Systems, Inc., maintained that the 36-year-old ruling pertains to today's outsourcing business, which is a form of service bureau work.

Affiliated first complained to the Justice Department almost two years ago and claimed that IBM's May 1991 formation of the Integrated Systems Solutions Corp. (ISSC) outsourcing subsidiary did little to alleviate IBM's breach of the decree.

The case had stagnated for almost two years, but it now appears to be moving forward: The Justice Department has kicked responsibilities up two levels, from staff attorney Richard Irvine to Gidley.

That development came in September. Since then, Gidley has met with Affiliated President Charles Young, has asked IBM for its response and has made plans to solicit indostry association Information Technology Association of America (ITAA) for more information, Young said.

The Justice Department was scheduled to meet with IBM last week, Young said.

Calls to Gidley and Irvine were referred to a department spokeswoman, who characterized Gidley's actions as "an investigation of facts [into] whether or not there's been a violation of law." The spokeswoman declined to elaborate on the request the Jnstice Department has made of IBM or oo how its request may differ from any earlier requests it has made of IBM.

An IBM spokeswoman said, "This is not a matter we discuss publicly. We believe we are in compliance with the Consent Decree. Anything beyond that is speculative."

Meanwhile, IBM chairman John Akers last August asked ISSC's general counsel Stephen Huhn to investigate the matter. That directive came in response to a letter that Young sent to Akers. In that letter, Young raised questions about the legality of ISSC and asked Akers to supply Affiliated and other outsourcers with a list of inventory and prices of products sold or leased by IBM to ISSC. IBM was bound by the Consent Decree to provide that and other information, Young said in his letter.

In his reply, dated Aug. 12, Huhn said: "We have begun an internal inquiry into your questions and will respond as soon as possible after its completion."

As of late last week, Young said be had not yet heard from Huhn or IBM. Huhn is also believed to be handling the Justice Department's request of IBM.

Affiliated alleged that IBM's formation of ISSC did not clear the computer giant of wrongdoing because ISSC continues to use IBM's sales force and name and to receive special discounts. Furthermore, ISSC continues to benefit from outsourcing jobs obtained by IBM prior to ISSC's formation, Affilated claimed. Affiliated has urged that IBM be stripped of all pre-ISSC contracts.

"No matter how this turns out, IBM has had the effect of lowering prices to customers by bringing margins down to more of s manufacturing level than a service level," observed Warren Gallant, a principal at Technology Partners, Inc., a Houston consultancy that has helped negotiate IBM outsourcing deals for Riggs National Bank and Matson Navigation.

"I believe their prices are competitive but certainly not advantageous over the competitors," Gallant said. "If the decree came down and kept them from staying in the business, the margins could creep back up."

The Justice Department had asked ITAA to solicit members for input once before, but according to an ITAA spokesman, the "silence was deafening" when ITAA asked for comments. The ITAA spokesman noted that "there were some who did know about things but didn't want to say it." He further explained that for some members, "either there wasn't anything that bothered them, or if there was, they didn't want to talk about it."

Del Monte feeds EDS its IS operations

BY KIM S. NASH
CW STAFF

SAN FRANCISCO — Del Monte Foods canned its entire information systems operation last week, signing an estimated $150 million, 10-year outsourcing deal with Electronic Dsta Systems Corp. The contract, which Del Monte officials said will save the food processor an undisclosed "significant" sum, reverses a flat rejection of EDS outsourcing less than two years ago.

The agreement calls for EDS to purchase all Del Monte hardware and software, as well as offer positions to 100 of the food processor's 105 IS employees. EDS will provide all telecommunications, IS operations and applications enhancements and maintenance for Del Monte. The firm currently runs 85 financial, inventory and other applications on IBM 3090 mainframes as well as a recently completed distributed IBM Application System/400-based manufacturing system [CW, Oct. 19].

Del Monte contracted with EDS in March 1991 to help with a massive $12.4 million downsizing project that would move the food maker's manufacturing systems from IBM Series/1 machines to AS/400s. Del Monte declined an outsourcing offer from EDS at that time because it was completing a leveraged buy-out from Nabisco Brands, Inc., according to David MacPherson, chief information officer.

In addition to being unfamiliar with EDS back then, IS had to take a backseat to the business issues of seceding from Nabisco. "It was a matter of priorities," MacPherson said.

However, a poor U.S. economy forced the company to reconsider farming out IS. "If you can't grow the business the way you thought, you have to find a way to reduce expenses," MacPherson explained.

Officials declined to specify projected savings, but much of it is likely to stem from the elimination of IS salaries. All 100 Del Monte IS staff members are expected to transfer to EDS, officials said. The remaining five will stay at Del Monte to "represent our needs to EDS," MacPherson said.

Hardware upgrades will be handled as an incremental expense separate from the base fee Del Monte has paid EDS, MacPherson said.

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Sybase products challenge Oracle 7

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Sybase, Inc. is firing a round-the-world salvo at its largest competitor, Oracle Corp., this week, briefing users and analysts across the globe on its plans to distribute client/server computing across the enterprise.

The announcement of Sybase's System 10 product line is meant to assure users that Sybase will be delivering industrial-strength database tools for high-volume on-line transaction processing applications beginning next year.

However, Sybase does not intend to give specific delivery dates for the System 10 product line, longtime users said last week. "They've been burnt in the past by promising [products] and not delivering in certain time frames," said David Truch, former president of the Sybase International User Group and a senior technologist at BP Exploration Alaska, Inc. in Anchorage.

"We're going to be painting the big picture, but we will oot be giving a whole lot of detail," agreed Perry Mizota, Sybase's director of strategic marketing. "We want to address some of the requirements of the next phase of client/server computing."

Flexibility key

That kind of long-range planning is fine with many users, who just want to be assured that the $160 million company will be able to respond to whatever products its relational database management systems competitors can dish out.

"They've been working on some of this stuff for two years or more," said Bill Soper, manager of information services at Chevroo Canada Ltd. in Vancouver, B.C. "We saw some of this stuff at the design stage, but things were getting so complex out there in terms of what people are trying to do with these databases that [Sybase] decided to show [the products] now."

Industry analysts agreed that time is of the essence in unveiling System 10 products this month, as Oracle prepares to ship its new database in volume. "Sybase is feeling the heat of [Oracle's] Version 7," said Judith Hurwitz, president of the Hurwitz Consulting Group io Newton, Mass.

There are technical issues, too, including many related to the management of distributed DBMSs. Oracle claimed that Sybase's two-phase commit methods are awkward, requiring extra lines of programming for real-time transaction processing. That claim has been answered, in part, by System 10's Replication Server for updates of multiple, distributed servers.

Likewise, System 10's Navigatioo Server addresses Informix Software, Inc.'a parallel data query (PDQ) feature for its Informix 6.0 database, due in 1993. The PDQ feature speeds throughput by sending complex queries to multiple CPUs.

User patience wearing

However, some users noted that they could not wait much longer for forthcoming Sybase products, including the Replication Server. "It's not happening fast enough," said John Wehh, manager of database administration at Moody's Investors Services, a securities rating firm in New York.

A year ago, Moody's started using a third-party product, the Multi Server Option from AFIC Computers, Inc. in Jerusalem, to update servers in real time across its local- and wide-area networks.

User enthusiasm runs highest for the Replication Server, which some said is expected to ship in the second half of 1993. "I think that anything that helps us manage a distributed database environment is a welcome addition," Soper said. "There will be automatic updates with less programmer intervention. It's a more intelligent way to handle operations."

The oil and energy firm is building a network of 30 Sybase SQL Servers in Western Canada that will update parent Chevron Corp.'s databases near San Francisco.

The value of the Replicatioo Server lies io the ability of information systems managers to control network costs, said Dirk Epperson, vice president of research and development at Hill Arts & Entertainment, Inc. in Emeryville, Calif., which designs Sybase DBMSs for ticket vendors.

"We will be able to make the choice of what 'near real time' means to us and to make decisions based on how much it will cost to make each update," Epperson said.

Sybase 10 ingredients

Sybase 10, which is expected to begin shipping next year, will consist of the following compooents, according to comments made by Sybase executives in London and the U.S. last week:

- The Replication Server, a Sybase SQL Server system said to allow a master server to update multiple remote servers even if they are geographically dispersed. The updates are done in "near real time" so as not to choke networks with two-phase commit updates that lock servers.
- Sybase SQL Server 5.0, an enhanced database engine capable of storing very large databases comprising multiple gigabytes of data. Speed, performance, database security and data recovery have been enhanced in this upgrade.
- Navigation Server will support the division of complex database queries into small pieces for processing on parallel server systems. Sybase has been working with NCR Corp. for some time on this product, which reportedly can increase throughput tenfold or more when used on an NCR 3600 server.
- OmniSQL Gateway will allow users to write stored-procedure code in Sybase's proprietary Transact/SQL language, then use those applications to run against Sybase or Oracle databases.
- Performance monitors and network management software designed to support the use of Sybase database servers in high-volume on-line transaction processing environments. Additional IS controls are considered key to wider acceptance of large Sybase databases in IBM mainframe shops.

Compiled by IDG News Service correspondent Ron Condon and senior West Coast editor Jean S. Bozman.

Oracle Glue API debuts

BY JEAN S. BOZMAN
CW STAFF

REDWOOD CITY, Calif. — Oracle Corp. last week announced software that it said will affix Windows applications directly to Oracle products through Microsoft's Dynamic Link Libraries (DLL).

Oracle Glue 1.0 is an application programming interface that allows Windows developers to tie programs written with Microsoft's Visual Basic and Excel to a variety of back-eod database servers, including Oracle's SQL Net, IBM's DB2 and Borland International, Inc.'a Paradox and dBase.

Lotus Development Corp.'s 1-2-3 spreadsheet and AmiPro word processor applications are currently supported.

Oracle Glue is slated to be available in April 1993 for $2,995 through Oracle's direct sales force and via the firm's telephone sales. The product includes a license for unlimited runtime versions of Oracle Glue.

There is an additional $899 yearly maintenance fee for upgrades and support.

Downsizing pushes IBM DBMS revamp

CONTINUED FROM PAGE 1

(see story this page).

"I've heard [IBM] mention the AIX database at briefings, but I just tune it right out," said Bob Denison, open systems development unit manager at Wausau Insurance Cos. in Wausau, Wis., one of IBM'a early commercial sites for the RS/6000.

"It makes sense for IBM to do this because not every customer is going to be as independent as one our size or willing to integrate their own stuff," said Mark Schmidt, vice president of information technology and communications at Wal-Mart Stores, Inc. in Bentonville, Ark. The retailer uses Unix gear from NCR Corp., Hewlett-Packard Co. and IBM.

"We're a large Informix user now, but we would obviously want to take a look at an AIX [database], just as we look at all new technology," Schmidt added.

Analysts were similarly skeptical. Richard Finkelstein, president of Performance Computing, Inc., a Chicago-based consultancy, said, "There's no real vision here; IBM is just tossing things out like it's an inventory sale."

"Inevitably, DB2 sales will slow down as mainframe sales slow," said Colin White, president of Database Associates International, a consulting firm in Morgan Hill, Calif. "But IBM will find it very difficult going in Unix because they have never been able to add new functionality, test it and get it out the door as quickly as their competitors. It will require fundamental changes io IBM and its development organizations."

Nor is Version 3.1 of DB2 expected to help stem the downsizing tide. "I don't expect it to make a difference either way," White said. "It won't be any major reason for people to stop downsizing, although it will be good for existing DB2 users."

Mainframe distribution

The new DB2 will allow a mainframe to distribute portions of database processing to other computers, with the first machine coordinating the transfer. If a transaction is interrupted, the first machine decides whether to commit or abort the process. This feature is known as a distributed unit of work.

IBM officials disputed the negative view of its database moves. Al Zollar, DB2 product manager, said IBM expects to keep growing — albeit slowly — the number of DB2 licenses, which oow stands at 6,000. About 40% of those are in the U.S.

"There's been shrinkage" in the number of U.S. DB2 licenses," Zollar acknowledged, "and growth outside. Overall, it's been a flat picture." Nonetheless, he said, IBM believes it can still increase DB2's market share on existing MVS platforms, particularly in the data query market. "I do see opportunity for DB2 growth," he said.

Extended relations

IBM's AIX relational database will have the following features:

- Built on the OS/2 Data Manager.
- Designed for a client/server local-area network architecture.
- SQL-based but not object-oriented.
- Equipped with an industry-standard interface to connect with IBM and non-IBM transaction monitors.
- Operating system-independent — such as Oracle Corp. or Sybase, Inc. — databases.
- Tightly integrated with DB2 on the mainframe and OS/2 Data Manager on the desktop.

Cincom soups up Supra DBMS

BY JOHANNA AMBROSIO
CW STAFF

CINCINNATI — Not content to let the distributed computing world pass it by, Cincom Systems, Inc. has revamped its mainframe Supra database manager to run on local-area networks and under Unix.

At the same time, Cincom managers said, the company has delayed the release of Supra Release 3.0 — its entry into the distributed database market — until March. It was originally due out on Oct. 15, but it turned out to be more challenging to get out the door than the company had originally thought.

The revamped database manager — called Supra Server, or Supra Version 2.4 — is receiving high marks from analysts for technical merit.

But some observers said Cincom's ability to market effectively against the major Unix contenders — including Oracle Corp., Ingres Corp. and Informix Software, Inc. — is anything but a done deal.

Nor are the other Unix database vendors sitting still. Sybase, Inc. is preparing a major announcement for next week, and IBM is slated to unveil its long-awaited AIX data manager next year (see stories pages 1 and 14).

Additional enhancements

Other features include forward and rollback recovery and hot backup, which allows administrators to back up the database without having to bring it down.

Supra Server runs under a variety of Unix-based operating systems, including those from Suo Microsystems, Inc.; Sequent Computer Systems, Inc.; the NCR division of AT&T; IBM; Hewlett-Packard Co.; and Digital Equipment Corp. It also supports LAN protocols including DECoet, LAN Manager, LAN Server, IBM's LU6.2, Novell, Inc.'s NetWare and Banyan Systems, Inc.'s Vines.

Prices for Supra Server, available now, range from $2,000 to $150,000, depending oo operating platform.

Consultant Shaku Atre, president of Atre, Inc. in Rye, N.Y., said, "It really looks very good. This could be a renaissance for Cincom."

Finding a new market

Still, technology may not be enough. Colin White, president of Database Associates International, a consultancy in Morgan Hill, Calif., said, "Cincom has good technology but like others has had difficulty selling it. It's a question of marketing. They have to appeal outside of their current customer base."

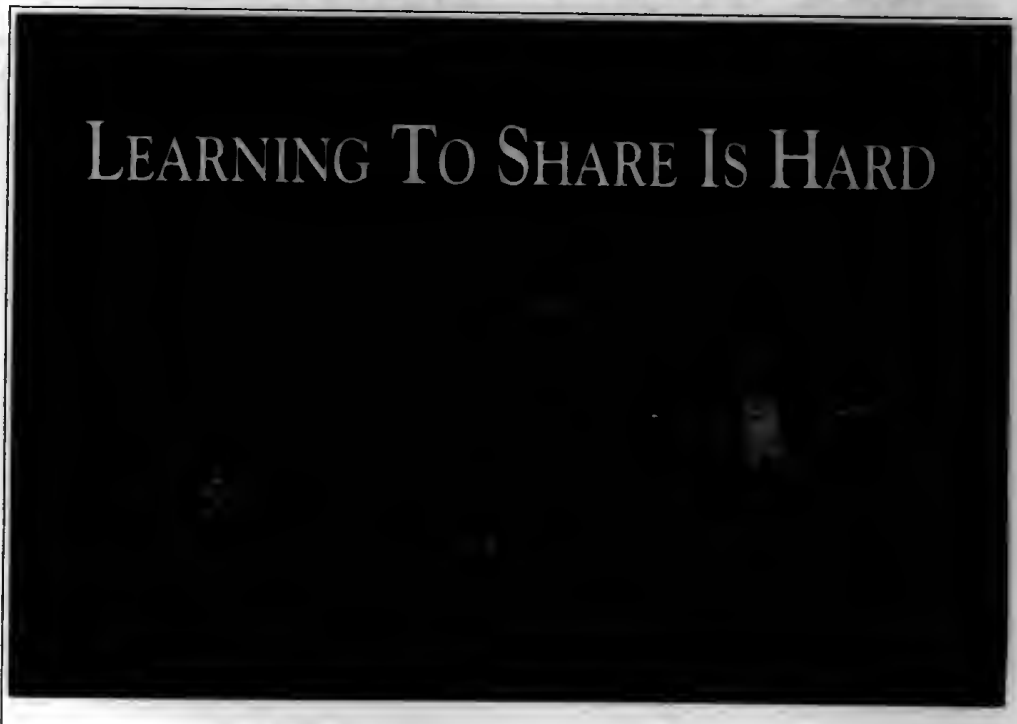
Dave Bunker, senior director of marketing and business planning at Cincom, said, "This is the most aggressive launch campaign in Cincom history." The launch budget of approximately $4 million will include advertising, trade show booths and seminars, among other things.

Craig Lincoln, manager of information services at Star Cutter Co., a manufacturer in Farmington Hills, Mich., said he is looking forward to implementing Version 3.0 at his VAX shop because "it makes sense to build independent databases to reside in the plants." But he said he is not disappointed with the six-month delay for the distributed Supra because "Version 2X is already doing a lot for us." Lincoln said he does not plan to install any Unix computers.

Cincom's basic strategy is to "bring the mainframe database, with all those reliability and security features, down into the client/server world," said Richard Finkelstein, president of Performance Computing, Inc., a Chicago-based consultancy.

Finkelstein said one important technical difference between Supra Server and other Unix database systems is a feature called updated views. It allows database administrators to change the structure of database tables without affecting the transaction.

"They're the only ones to do that," Finkelstein said.



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NEWS SHORTS

High tech will not top Clinton agenda

President-elect Bill Clinton's proposed high-technology policy initiatives are not likely to make the new administration's agenda in its first 100 days, a Clinton spokesman said last week. Clinton's policy includes government investment in national communications networks, diversion of federal research and development funds from defense to civilian sectors, education and training programs and investments in private industry consortia. One immediate priority that may affect high technology is an emphasis on an incremental tax credit for investments in new plants and equipment, including computer systems.

CSC seeks giant outsourcing deal

Claims that the outsourcing megadeal is dead apparently have not made it to Australia. Computer Sciences Corp. (CSC) has started negotiating what it says will be a $1.5 billion, 10-year accord with Australian Mutual Provident Society, a Sydney-based insurance group. A tentative agreement calls for CSC to acquire Australian Mutual's data processing subsidiary, Computer Sciences Australia, which, ironically, CSC once jointly owned. CSC would pick up 1,000 employees from the subsidiary and roughly 600 from an information systems shop at the parent company. About $80 million in annual revenue would result from existing business with the parent company — which buys only some of its processing from the subsidiary and other clients — and $70 million would come from other business.

Solaris 2.1 debuts

With 1,300 bugs exterminated and a swarm of new features added for commercial account appeal, the Solaris 2.1 Unix operating system made its debut last week from SunSoft, Inc., a Sun Microsystems, Inc. software subsidiary. Sun officials said some 800 of the most popular Scalable Processor Architecture applications are now being ported to Solaris 2.1, which is slated to ship on Sun's new systems next month and on Intel Corp. platforms next year. Desktop pricing is $795.

AT&T plans to buy stake in McCaw

AT&T last week said it is negotiating a $3.8 billion investment in McCaw Cellular Communications, Inc., the nation's No. 1 cellular company and sixth-largest provider of paging services. The equity stake, which officials said they expect to complete in first- or second-quarter 1993, would speed the deployment of a "seamless, nationwide network for cellular and wireless services." AT&T would grant McCaw a long-term license to use the AT&T name and give it access to AT&T Bell Laboratories.

DEC eases Canadian licensing

Digital Equipment of Canada Ltd. is changing its marketing practices in response to concerns voiced by the Canadian Bureau of Competition. The bureau objected to an "integrated service policy" whereby DEC's hardware servicing was tied to software servicing and pricing, impeding third-party maintainers and increasing costs for certain end users. DEC said it will change its practices in 1993, allowing for separate price quotations and stand-alone purchases of products and maintenance services from the vendor.

Short takes

Ethernet switching start-up **Kalpana, Inc.** in Santa Clara, Calif., and **Sun Microsystems Computer Corp.** said last week they will jointly develop products to address network congestion problems in Ethernet networks that contain high-speed workstations. . . . **AT&T Microelectronics** said it will build the Mobitex two-way wireless data-transmission architecture into its V.32 bis and V.17 bis modem chip sets, allowing modem makers to support both terrestrial and wireless communications in one package. . . . **HP** announced its developer's environment for the **Open Software Foundation**'s Distributed Computing Environment last week and said the software will ship in early 1993, at prices ranging from $395 per network client to $2,000 for the application development tools. . . . **Toshiba America Information Systems, Inc.** is expected to sign a strategic agreement with **MediaShare Corp.** that will make it the exclusive distributor of MediaShare's Mambo Digital Video Interactive Board. The product, which is used in Toshiba's T6400DXC and T6400SXC portables, costs $1,699.

Exchange to implement ATM

Pacific Stock Exchange plans to replace physical trading floor next year

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — Although conservatives claim it will be years before users turn to Asynchronous Transfer Mode (ATM) networking in a big way, the Pacific Stock Exchange plans to embark whole-hog on an ATM network next year if the technology becomes widely available.

The exchange intends to leverage the technology to replace its physical trading floor with a virtual one so that traders can conduct financial transactions from "wherever they find it most efficient," said David Eisenlohr, vice president of telecommunications.

Rather than the exchange floor, "this is likely to be a brokerage or other member firm's regional office, where they can put a Pacific Stock Exchange trading desk next to others that contact other exchanges," he explained.

Eisenlohr's organization would like to run an initial virtual trading floor pilot next July, then move to a nationwide pilot in late 1993.

The project would entail delivering multiple, real-time news feeds and other forms of market information to far-flung traders.

Eisenlohr said there are three reasons the exchange is looking to ATM — the technology hopeful for one day blending local- and wide-area networks into one cohesive, high-bandwidth switched network — to build the virtual trading environment:

- The security afforded by ATM's virtual point-to-point connections is critical to a financial trading environment. Like a telephone call, ATM establishes a temporary end-to-end connection for each transmission.
- The speed of ATM connections — into the gigabit per second range — is necessary for the half-second response times required in the hurried buy-and-sell market, particularly as market data becomes more graphical and bandwidth-hungry.
- The purported long-term viability of the technology means the company could ease up on continually deploying new technologies as they are born.

"U.S. businesses cannot afford to follow the technology game and keep investing in the box of the month," Eisenlohr observed. He added that "the No. 1 problem facing businesses is how to answer phones better and deliver better service. If you're continually putting time, money and effort into technology, you're not doing that."

Eisenlohr said he plans to spend the next few months trying to blue-sky the problems he is likely to face. So far, the biggest hurdle is that "ATM isn't here yet, and there is no other [high-bandwidth] integrated voice and data solution today," he said.

The exchange is looking at Integrated Services Digital Network for "smaller trading functions that may only have one or two phone lines and a couple terminals," he said.

In ATM's absence, the Pacific Stock Exchange is also investigating Switched Multimegabit Data Service (SMDS) and frame relay, alternative high-speed networking technologies that are further along in development, though Eisenlohr questioned their migration path to ATM.

At a recent Interop '92 Fall session, however, the presidents of the ATM, SMDS and Frame Relay Forums said osers investing in frame relay can ose the technology to access ATM down the road (see story page 57).

In addition, 1993 should be a "big year for ATM," observed Steve Bell, director of product marketing at Hughes LAN Systems, Inc. in Mountain View, Calif., one of myriad LAN vendors that have announced plans for ATM deployment next year.

Some ATM services should also emerge from long-distance telephone carriers during the year, said Fred Sammartino, president of the ATM Forum, who said he sees ATM as being about a year away from being cost-competitive enough for mass deployment.

Start-up firm delivers 'fast Ethernet' connection

BY LYNDA RADOSEVICH
CW STAFF

SAN JOSE, Calif. — If network standards are not an issue, users whose interest was piqued by last mooth's announcements from Grand Junction Networks, Inc. and Hewlett-Packard Co. will not have to wait as long as anticipated for high-speed transmission over Ethernet. Start-up MicroAccess, Inc. last week revealed it is shipping a $699 oetwork interface card for 100M bit/sec. over Ethernet.

The announcement fell one week before today's Institute of Electrical and Electronics Engineers, Inc. (IEEE) 802.3 committee meeting, at which 100M bit/sec. Ethernet standards will be addressed and where MicroAccess plans to present its "fast Ethernet" technology.

Industry giants HP, AT&T, 3Com Corp., Synoptics Communications, Inc., Sun Microsystems Computer Corp. and start-up Grand Junction Networks will present proposals at today's meeting as well.

However, pending standards approval, these vendors said they do not expect to announce products until the end of 1994 or later.

Analysts said the MicroAccess announcement is significant because it sets a low ceiling on the price of the technology. "There is no way for prices to go but down," said Mary Modahl, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass.

Despite the low costs, analysts agreed that the lack of standards would limit the growth of MicroAccess' fast Ethernet technology.

Some users — attracted by their availability and low price — are considering using MicroAccess cards to deploy small, departmental local-area networks.

For example, James Watson, manager of the advanced data processing laboratory at Sparta, Inc. tested MicroAccess's OptiLAN fast Ethernet Industry Standard Architecture (ISA) cards between four computers using six-pair unshielded twisted-pair wiring. The 25-minute installation process was easy, and the cards supported 30M bit/sec. transmissions, which were limited only by the ISA bus, Watson said. He plans to deploy a nine-node LAN in two weeks.

What price speed?

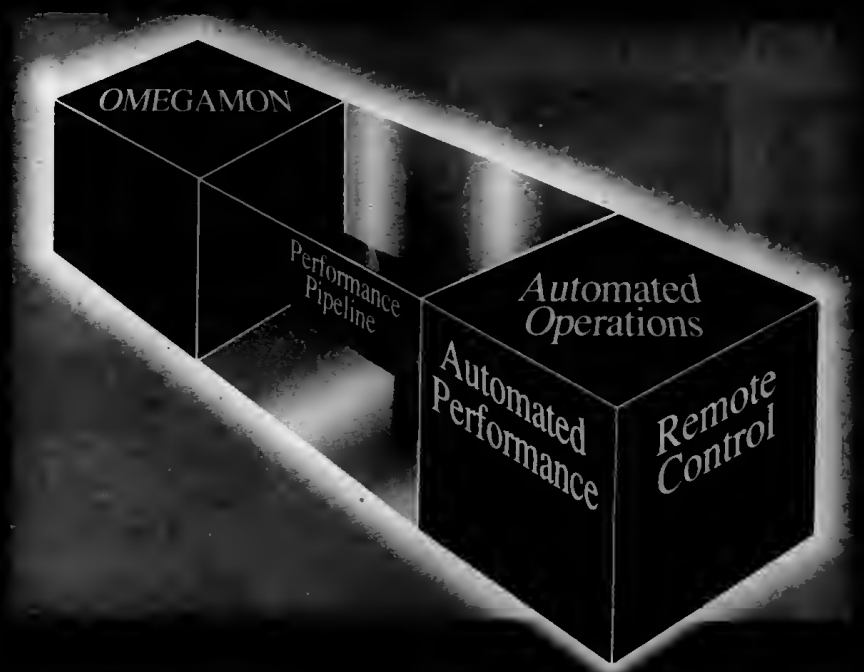
The costs of 100M bit/sec. Ethernet using MicroAccess' OptiLAN components are as follows:

16-bit XT/AT network interface card	$699
32-bit EISA network interface card	$1,595
400-ft unshielded twisted-pair wiring (6 pairs)	$28
400-ft shielded twisted-pair wiring	$72
Eight-channel star hub	$1,995*
Repeater	$995*

*Repeaters and hubs are optional components

CW Chart: Janell Genovese

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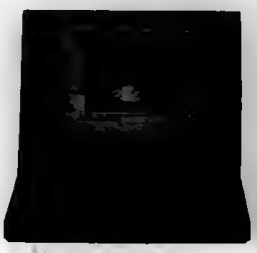
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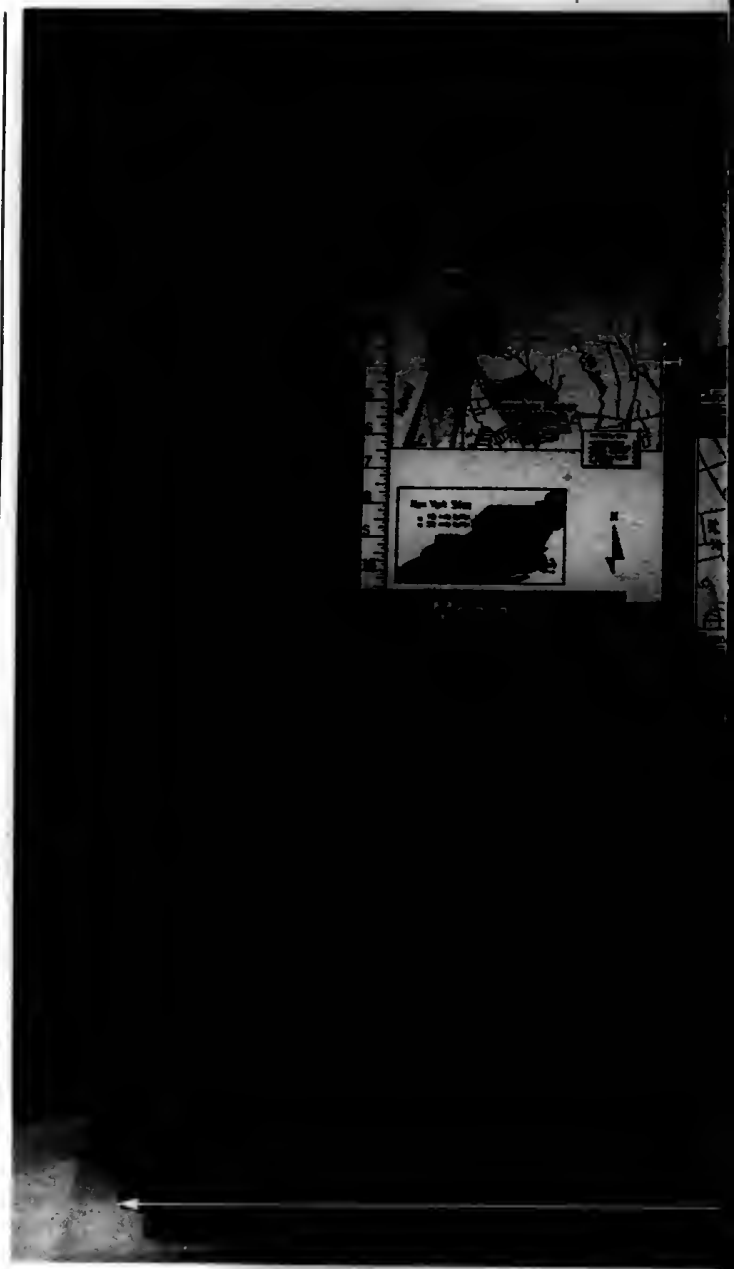
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Battery Life†	2–4 Hours	3.8–7.5 Hours	4–10 Hours
Weight	7.6 Lbs. with Battery	6.5 Lbs with Battery	5.9 Lbs. with Battery
Warranty	3 Years (International)	3 Years (International)	1 Year (International)
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CIM worries don't stall USAF overhaul



CONTINUED FROM PAGE 1

across all U.S. military branches.

Materiel's consolidations "are still meaningful" as an initial step to these broader plans, "provided we do it in lockstep with what the DOD is doing," said Paul Shahady, assistant deputy chief of staff for communications computer systems at Materiel. Otherwise, "we'll have to do the whole thing all over again" as part of the broader CIM effort, he added.

"It's a real trade-off," said Maj. Jack Stackhouse, chief of systems engineering and office automation programs at Materiel headquarters. "We have to look at what CIM will come down with and [yet] incorporate changes" that are necessary in the interim. For example, he said, "in some cases, such as database consolidation, it is advantageous to spend money [now]; in others, it is not a given that CIM will bring standardized systems across the DOD."

How much of Materiel's own IS facilities and projects it will retain during the next few years is another concern. A newly released CIM directive called Defense Management Review (DMR) 918 will give "overall responsibility" for data processing installations, central design and software activities to a central DOD agency, Shahady said. "At this point, we don't know how many computer assets will remain in Materiel."

The upcoming changing of the guard in the U.S. government will cloud not only the fate of Materiel IS projects, but also the fate of broader CIM efforts proposed by Director of Defense Paul Strassman, according to Jim Kerrigan, a private consultant based in Reston, Va.

A major upheaval in the executive branch, such as the one now in progress, tends to disarrange even seemingly solid projects such as CIM, said Kerrigan, who was the senior official of the Treasury Department at the time of the last party change in the administration, 12 years ago.

"So Materiel's modernization efforts may end up being more valuable than they expect. In this period of uncertainty, there are no guarantees that any major defense program will continue intact," Kerrigan said.

Indeed, Air Force logistics modernization projects have had a history of being shunted from one program to another, Kerrigan said. At one point, the Air Force Computer-aided Acquisition and Logistics Systems (CALS) project was canceled, and the Air Force was told to use the Army's CALS program, renamed Joint CALS. "That's been moving along, but it's not clear how much the Air Force has embraced it."

Materiel is the result of a merger, finalized in July, that combines Air Force Systems Command, which handles the design through acquisition phases of weapons systems, with Air Force Logistics Command, which handles maintenance, deployment and supply. Based at Wright Patterson Air Force Base in Dayton, Ohio, Air Force Materieis Command comprises some 126,000 civilian and military personnel, who are responsible for 52% of the budget and all weapons systems development within the Air Force.

Materiel expects a 10% to 30% reduction in overall personnel as a result of DMR directives during the next four years. In line with these reductions, the merger's central aim is to improve weapons' effectiveness and readiness within the Air Force by streamlining and consolidating the organization that handles weapons systems, all the way from research and development to the end of the system life cycle, Shahady said.

Prior to the merger, Systems Command would manage all Air Force requests for proposals through production stages of a new weapons system and then hand them over to Logistics Command, which would take care of deployment and maintenance.

Now, Air Force Materiels Command appoints a system program director to oversee the entire process and resolve any conflicts between Logistics, which wants the most "sustainable and maintainable" weapons possible, and Systems, which wants to "field the most capable weapon system possible," Shahady said.

Part and parcel with the merger are projects to consolidate and standardize IS and "make computer support a commodity across the whole command," Shahady said.

Materiel is far from such uniformity. Logistics follows a centralized systems philosophy based primarily on IBM mainframes. Systems, with its heavy emphasis on R&D of weapons systems, has supercomputer centers that house Cray Research, Inc. supercomputers and client/server systems combining Digital Equipment Corp. VAXclusters and a mix of local-area networks. The latter include Novell, Inc.'s NetWare, Tiara Computer Systems, Inc.'s 10Net, Transmission Control Protocol/Internet Protocol and the International Standards Organization's Open Systems Interconnect (OSI).

Ultimately, Materiel hopes to migrate to a client/server architecture based on standards such as Posix and OSI to ensure interoperability, if not uniformity, across the various systems. It is trying to keep to the Government OSI Program and nther DOD directives.

The command also hopes to save between 13% and 30% in recurring operating costs from the move, based on the results of similar projects, Shahady said. Materiel's IS budget (hardware and software, not personnel salaries) is $425 million.

The Systems side of the house is three years into a project to migrate to a standards-based client/server environment by the late 1990s. However, the Logistics side is less eager to throw out the host systems that it has just spent millions of dollars modernizing and consolidating, Shahady indicated. Started in the mid-1980s and slated for completion within 18 months, that project is expected to realize a savings of between $70 million and $75 million from the consolidation of 44 IBM MVS hosts down to eight, housed in five data centers, he added.

The logistics modernization effort is nne Materiel project that is in danger of being made obsolete by upcoming CIM initiatives, Shahady said. In particular, the DMR 918, still in the planning phase, "will call for another round of consolidation because Strassmann's vision is to create megacenters servicing large chunks of the customer base" across the Army, Navy and Air Force, he added.

Shahady expressed the hope, however, that Materiel's current consolidation efforts will become the initial steps to the full, DOD-wide consolidation under CIM, which is not expected to be completed for annther seven to 10 years.

Some ongoing Materiel projects may be turned over to the Defense Information Systems Agency (DISA) when DMR 918 kicks in, Shahady said. Even so, the effort will not be wasted: "We can say, 'We tried this; it works. Here, DISA — we recommend you implement it,'" Shahady said.

Colossal consolidation

Another high-priority project now in the works at Air Force level involves consolidating "base-level" systems scattered across various Air Force bases into five regional processing centers running Unysis Corp. Model 622 hosts.

These systems will run applications such as personnel, finance and budgeting for the entire Air Force, said Paul Shahady, assistant deputy chief of staff for communications computer systems at Materiel.

The project, which was initiated by the DOD under Defense Management Review 924, involved moving from more than 300 mainframes, minicomputers and superminis to 21 large Unisys mainframes.

So far, two centers are up and running, with the rest slated to be on-line by May 1994.

Other Materiel projects also have the potential of feeding into the broader CIM effort. For example, the center is now combing Materiel command bases in search of "best-of-breed" office automation, network, electronic mail and business process support applications.

The aim is to ensure that each time a new weapons system is initiated, the task force team put in charge has a "set of packages that we've proofed and tested, an we don't have to reinvent the wheel," according to Shahady.

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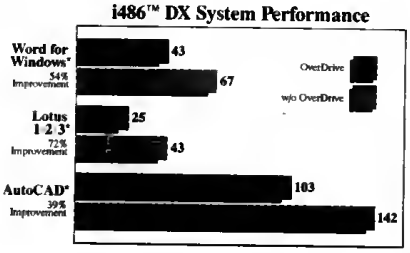
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SAS unveils initial packages for Windows

Spreadsheet, executive information systems, data analysis and natural languages tools bow

BY GARY H. ANTHES
CW STAFF

CARY, N.C. — SAS Institute, Inc. last week introduced its first set of products for Microsoft Corp.'s Windows. The products — six are new for the desktop and the others were released earlier for IBM's OS/2 — have been shipped to 680 beta-test users and will be generally available early next year.

SAS for Windows 3.1 is targeted at applications developers and end users. It includes a spreadsheet package, object-oriented tools for building executive information systems, a graphical data analysis tool and a natural language query tool (see story below).

The Federal Reserve Bank of Chicago uses SAS products in its research department for economic modeling and forecasting, and it recently added the Windows products to its stable of SAS products for MVS, DOS and OS/2 Release 1.3. Windows will provide a bridge solution for 100 users moving from DOS to OS/2, said Scott Johnson, a programmer at the bank.

Johnson said that at present, most user workstations — 80386-based, 20-MHz machines with 8M bytes of memory — are not hefty enough to run OS/2 well but are adequate for Windows. The bank will transition its applications from DOS to Windows to OS/2 as more powerful workstations are brought in, he said.

Johnson also said analysts would use the new SAS/Insight tool for data visualization, "to get an early feel for what the data looks like." He said it should be a big improvement over the text-based graphics from the DOS-based SAS products.

US West in Englewood, Colo., has the SAS Windows release and is planning to convert existing DOS licenses for 50 users to Windows when the production release is available.

Marvin Schwartz, systems programmer, said the company will probably move to Windows New Technology (NT) when it is available next year. "True 32-bit multitasking would be desirable because SAS is such a big product. [NT] would handle it better," he said.

No enhancement

Some users said they are unhappy with SAS' decision to support but not enhance the DOS version of SAS.

"There are researchers in our labs who are not interested in moving to either OS/2 or Windows," said Larry Bridges, corporate SAS coordinator at Eli Lilly & Co. in Indianapolis. "SAS has frozen [PC SAS 6.04], forcing the customer to go to either OS/2 or Windows."

An SAS spokeswoman said SAS will continue to support the existing release of SAS for DOS but cannot bring it forward because the operating system will not support the memory and graphical user interface needs of the newer SAS products.

SAS developed OS/2 versions of its desktop products first but found demand for Windows "overwhelming" and "surprising," according to Randy Betancourt, manager of workstation systems group sales and marketing. He said the clamor for Windows was spurring SAS to speed development of the Windows NT release.

SAS said it will release a beta-test version of the SAS System for OS/2 2.0 this week, a version for Unix in the second quarter next year and one for Windows NT in mid-1993.

Opening Windows

Desktop products introduced with the SAS System for Windows 3.1 include the following:

•SAS/Calc: Spreadsheet package that supports 120 functions, including three-dimensional views.

•SAS/EIS: Object-oriented development environment to build EISs.

•SAS/Lab: A sophisticated statistical tool for laymen.

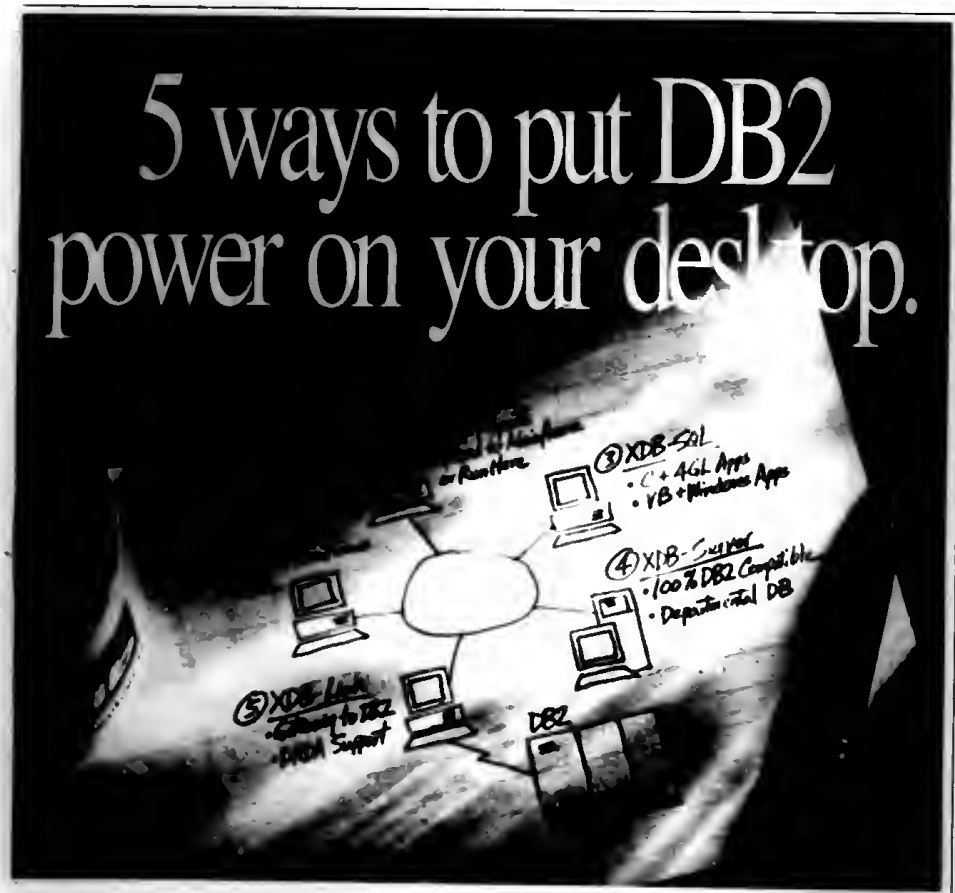
•SAS/Insight: An interactive graphical data analysis tool.

•SAS/English: A natural language interface for retrieving data from external sources and SAS data sets.

•SAS/Access for PC File Formats: Provides links to the major database management systems.

Price: First workstation, $695 for first year and $300 annual renewal; 10 workstations, $3,395 for first year and $1,650 renewal.

General availability: First-quarter 1993.



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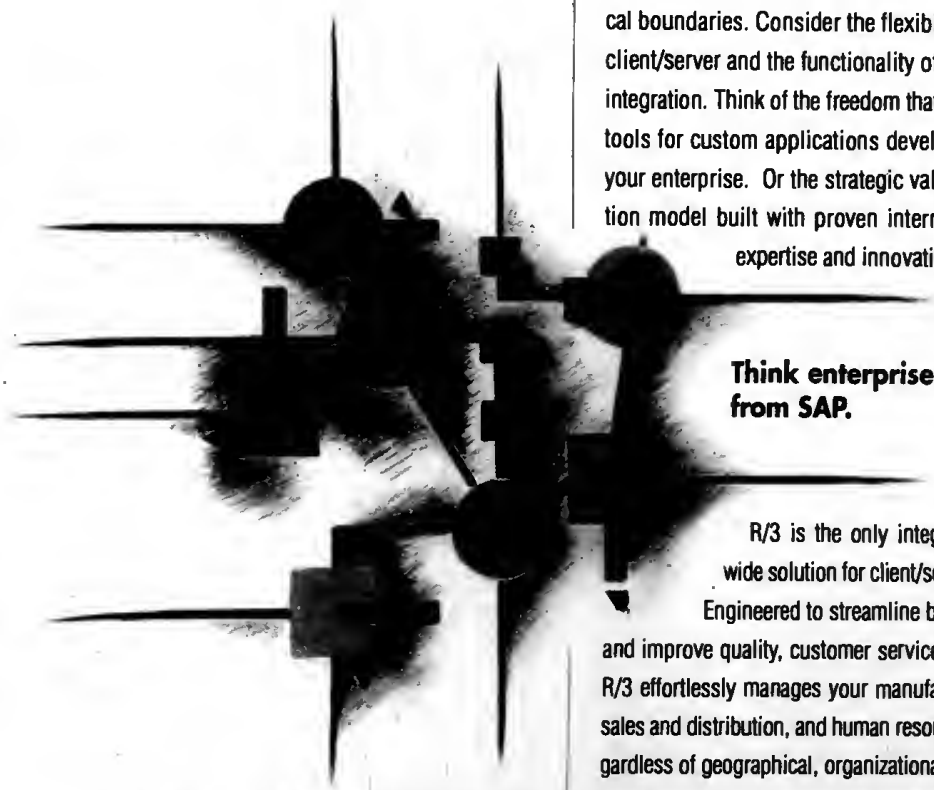
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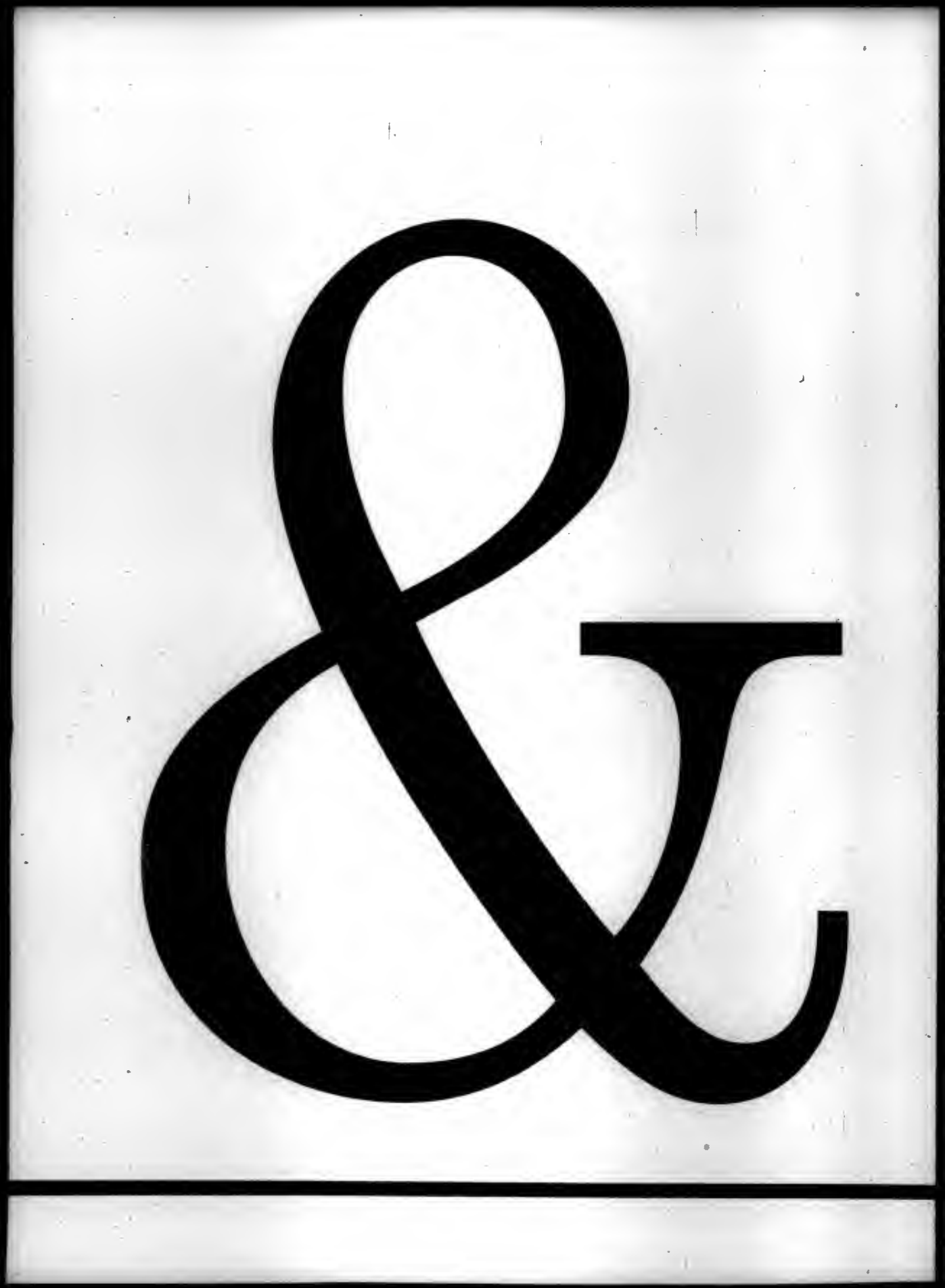
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ADVANCED TECHNOLOGY

Now playing: A medley of your favorite data

IBM would use phonograph-like setup to store up to 100 times more information than today's disks

BY KIM S. NASH
CW STAFF

Imagine a high-powered, supersensitive phonograph. A needle made of silicon nitride glides over a polycarbonate surface — the same material compact discs are made of. A small cantilever spring shifts when the tip meets a bump or dent, and these movements are measured with the laser beam down to the angstrom — about the size of a single atom.

Scientists at IBM's Almaden Research Laboratories in San Jose, Calif., are experimenting with such a system, and they are finding it yields impressively high storage capacities. Almaden's atomic force microscope (AFM) is at the center of the technique, which allows for about 100 times more capacity than a like-size optical disc.

Like a compact or optical disc, the AFM system records data in the form of tiny pits, but the pits are much smaller, each measuring one micron in diameter, or one-fiftieth the width of a human hair. The method can write 30 billion bits of data per square inch at a rate of about 100K bit/sec. That is about 10 times slower than a CD and among the more serious hang-ups to getting this technology to market.



Viable commercial products are not just around the corner, acknowledged IBM researcher Jonathan Mamin, who has studied so-called scanning probe techniques for five years. "We're making progress all the time," Mamin said, but the following technological hurdles remain:

•**Reading.** Speed — or a comparative lack of it — is the main problem with reading data this way. Reading takes a few seconds per individual pit. During the fastest demoostrations using the AFM, researchers have achieved speeds of 100 KHz, whereas CD technology operates 10 times faster at minimum.

•**Writing.** Speed is also an obstacle in writing data, but for a different reason. To record data using scanning probe methods, the tip of the stylus must be heated so it can soften and "burn" marks into the recording surface. The tip then has to cool down for a few seconds before it can be used to write again. Researchers are working oo ways to release the heat faster.

•**Arithmetic.** There are other practical considerations besides speed — namely, economies of scale. For instance, manufacturing the tiny cantilever spring setups requires a huge effort right now in the field of micromechanics — the science of making oearly microscopic machines.

Some groups in the automotive industry are building mechanical contraptions, but no one is doing so currently in this field.

The cantilevers the Almaden lab uses in its demonstrations are commercial products but are not optimized for data storage purposes. Mamin said the lab hopes to start coostructing its own springs. However, productioo requires machinery and clean-room precautions like those used in silicon processing, a large financial and technological hurdle.

Helical scanning

IBM and partner Ampex Systems Corp. in Redwood City, Calif., plan to develop high-speed, online archival storage systems capable of delivering trillions of bytes of data for scientific, engineering and commercial applications.

The project will be spearheaded by Adstar, IBM's San Jose, Calif.-based storage system unit, which will provide its data management, systems integration and subsystem control expertise. Ampex will contribute its experience in the use of helical scan recording.

Helical scan recorders are found in video gear; unlike linear tape systems, they use a spinning cylindrical read/write head around which the magnetic tape is wrapped.

A prototype of the storage system will be placed at the University of California Lawrence Livermore National Laboratory in Livermore, Calif.

ELLIS BOOKER

Bell Labs: Research first, commercialization later

The first in an occasional series of interviews with computer scientists conducted by Ellis Booker, Computerworld senior editor, advanced technology.



Ravi Sethi

Ravi Sethi is director of the Computing Science Research Center at AT&T Bell Laboratories. He joined Bell Labs in 1976 as a member of the technical staff and in 1987 was appointed head of the Computing Principles Research Department. Before joining AT&T, Sethi was on the faculty of the computer science department at Pennsylvania State University.

AT&T Bell Labs, located in Murray Hill, N.J., employs more than 1,000 scientists in four subject areas: physics, computing, communications and materials.

What's the mandate of AT&T Bell Laboratories?

We're a research center. [That means] we don't start out asking if something will be a commercial product. We don't want to be blindsided by changes. Rather, we want to look at technology trends independent of commercial possibilities. When it comes to commercialization, other units within AT&T, and now NCR Corp., handle it.

Given that, isn't it difficult to coordinate the lab's activities?

My other hat is more relevant [to that]. For all Bell Labs' research, I am a coordinator, or contact, for NCR. I facilitate cootact between the research people and NCR.

Is there an overall direction to the research and development?

Some of the things we're working on are a natural outgrowth of things the company is interested in: distributed systems, for example.

Part of research's role is to be prepared for technology *before* the company needs it. When someone in the company comes along and says, "We need help with a particular technology," we don't have time, at that point, to look at the textbooks. When the need arises, we'll have experts or contacts or know where to look to find them.

[Also,] no matter how large an organization, it can't cover everything. So we make guesses. For instance, we might explore the limits of certain techniques and technologies.

How long does research take before it reaches fruition?

Some things that we do, the time horizoo can be measured in five or 10 years. Not because we aim that far but because it may take that long to get something into commercial use.

For example?

We're exploring data communications at very high speeds. There's an experimental network connected at 45M bit/sec. to the University of California at Berkeley.

The questions we are exploring include: What happens when you have such speeds available? What applications will that [infrastructure] lead to? If we were to have high-speed communications, this might change where the computer, the compute engine and the display is [located].

Looking back to when you joined Bell Labs in 1976, what didn't you anticipate?

At the time, I personally could oot have predicted the rise of PCs and PC software. Here at Bell Labs at the time, much of the emphasis was on Unix.

What technologies do you think are going to cause the biggest changes?

Personally, I'm looking at the way people use the PC on the desk. The fact is, 10 or 15 years ago, people were looking at the efficiency and performance of the processor and of disks. Those are not constraints today. [In the future], one's personal requirements will determine the interface.

How has the use of technology changed in your own office?

The use of E-mail. I've been using it since 1976, but only within the last three or four years have we been organizing the messages using Unix tools. I prefer getting E-mail, since I can manipulate it and still have access to it. I work three or four hours every day at home. It's very convenient to have access to everything [remotely]. I just came back from two weeks in Spain, and it was wonderful not to call in — but it's wonderful to have the option.

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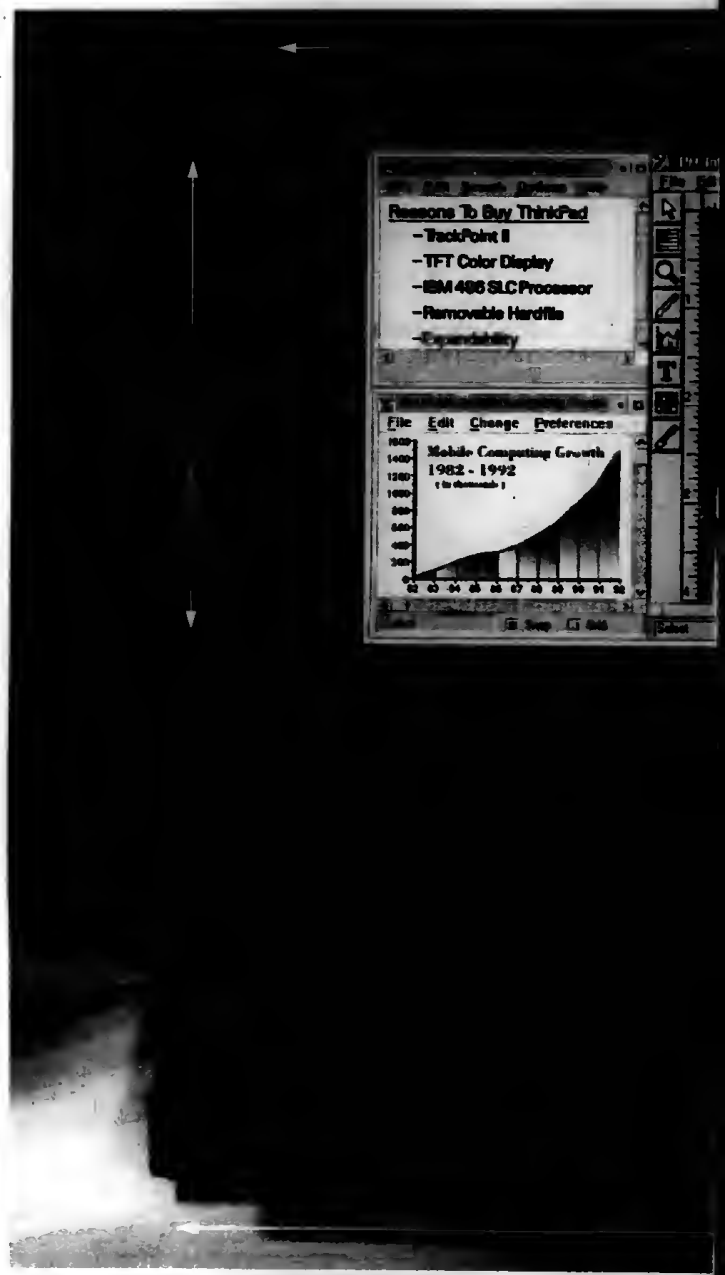
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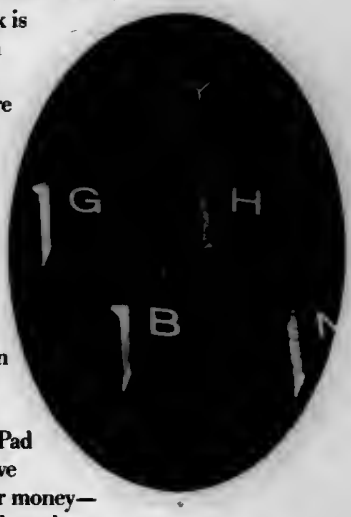


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EDITORIAL

Workgroup woes



Could it be, as Yogi Berra once said, deja vu all over again?

If you think back about a decade, the IS community was caught unawares when what started as a trickle rapidly built to a tidal volume of PCs entering the workplace. IS first rejected the machines as toys and erected barriers, but they did little to impede the flow.

Thus, a new paradigm in computing was launched. And while computing came to the professional masses, it came at the expense of many benefits that could have been derived had IS management jumped aboard the PC bandwagon and facilitated the move to end-user computing.

Thankfully, times have changed, and IS management today plays a pivotal role in the acquisition of PCs. In the 1990s, the emphasis is moving from personal productivity to the productivity of the so-called workgroup. A slew of new productivity tools, led by groupware products such as Lotus' Notes and Microsoft's Windows for Workgroups, are touted as the glue that will bind disparate PC applications and form integrated workgroup productivity environments.

Microsoft is planning to sell about $400 million worth of Windows for Workgroups in the next 12 months, and that might be a conservative figure. There is demand for the product, but IS is not registering much enthusiasm at this point. There should, and needs to be, more interest — if for no other reason than the product and others similar to it are coming, like it or not.

To be sure, IS has very valid concerns about these products. The Notes product, for example, has the unique capability of replicating databases throughout the network. Should the people who are responsible for data integrity and data security be concerned about this? Darned right they should.

IS, in general, is also being heavily scrutinized as it searches for metrics to prove the value of information technology expenditures. The attitude of many vendors, including Microsoft, is that the products they throw into the market will generate new and highly productive applications over time. There aren't many IS managers who would bank on that kind of payback.

So some healthy skepticism to this emerging class of products is understandable. But broad-based rejection, tacit or otherwise, would really be nuts. The users of products that target small groups of corporate users, like Windows for Workgroups, will soon seek ties to higher order networks and databases for more comprehensive, user-driven applications.

It will be vital for IS managers to play a key support and education role if user departments are to better understand what it is they are getting into, and what they can reasonably expect from their workgroup computing systems. Anything less would be abrogating a key responsibility, as well as ignoring some of the most difficult lessons of the past.

Bill Laberis

Bill Laberis, *Editor in chief*



LETTERS TO THE EDITOR

Good reason why Johnny can't get A's in programming

Regarding the Viewpoint article "Why Johnny can't get A's in C programming," by Edward Nilges [CW, Sept. 21]: I first became involved with PCs in 1982. After several days of studying C programming, the best I could say was that the syntax was extremely archaic, depending on 1s and 0s and special characters instead of real words.

When a co-worker was involved in a C coding project with three other programmers from Iran, India and Sweden, I realized that, for someone whose native language is not English, squiggles and wiggles are probably easier to comprehend than English words.

C is just plain weird, and therefore experienced people subconsciously criticize and reject it, whereas oovices, with no basis for comparison, will accept it more easily.

As to whether the foreigners are "clearly" a "better buy" just because they work for a smaller salary, Nilges totally oeglected the issue of verbal communication skills.

Communicating with someone who does not have English as a native language can be a significant problem when attempting to discuss system design and operation. It can also cause major misunderstandings and project delays, despite the technical capabilities of the person in question.

It is interesting that an article oo the same page tells us that price is only one factor to consider — others being quality, support and vendor accessibility.

Nicholas J. Andrelli
Alexandria, Va.

Three out of five ain't bad

Your Oct. 12 issue had a product evaluation of Amdahl's 5995M on the front page with a comparison chart against IBM's ES/9000 Model 900.

Despite the fact that the ES/9000 scored better than Amdahl's 5995M on three of the five primary attributes you rated, including reliability and performance, your description over the chart only refers to the one area where the Amdahl had a higher rating.

I have for a long time been aware of your bias against what you appear to regard as the Big Blue monster, but so obvious a bias in the face of results from your own evaluators casts doubt oo the impartiality of what should be straightforward reporting.

In the light of this and other such opinions very lightly masquerading as articles, I am canceling my subscription.

Thomas M. Cahn
Westbury, N.Y.

Missing CASE

In the recent package on the successes and failures of CASE, "All a state of mind" [CW, Oct. 12], it is remarkable that no mention is made of software engineering.

CASE standa for computer-aided software engineering, and if you're not practicing software engineering, CASE can't help you. Research indicates that few organizations have a software development process that is sufficiently mature to benefit from CASE.

Andrew Raybould
Jersey City, N.J.

Dead and buried?

If the advent of client/server applications has killed and buried the mainframe, how come all three of the client/server success stories you wrote about in your Oct. 12 edition ("Distributed systems: Tough to take root") rely on mainframes for their server component?

Howard Glassman
Seattle

Could Oracle be the culprit?

The article "Software makers fear downsizing toll" [CW, Oct. 26] quotes software manufacturers, particularly Oracle, as lamenting the shift of sales to client/server platforms at the expense of IBM mainframe and VAX minicomputer sales.

Could it be that companies such as Oracle, which charge up to 10 times more for a minicomputer license to support the same number of users as for a client/server platform license, are in fact a major cause for the shift?

Tom Quinn
St. Paul, Minn.

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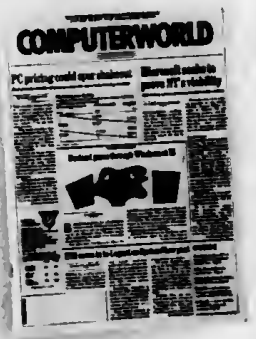
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31. Dir./Mgr. MIS Services, Information Center
03. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt., LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D. Tech. Mgt.
85. Sys. Integrators/ VARs/Consulting Mgt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
13. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgr.

OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
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3. Does your job function require involvement with your company's or your client's computer/ information systems/data processing/ communications systems? (Please check only one)
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Framingham, MA 01701-9171
(508) 879-0700

Dismantle the pyramid and share power

HARVEY R. SHREDNICK



Information services at Corning, Inc. are now going through significant changes, and soon my role will change, too.

We realize that IS is no longer a corporate staff function but a services-for-sale business that must compete with outside providers on quality of service and cost-effectiveness.

Because of this, we have begun to seek total customer satisfaction by moving power and responsibility into the hands of those closest to the customers.

Roughly 40% to 50% of the IS staff is now involved in self-governing, high-performance teams that have the authority to make major decisions without being hamstrung by a chain of command.

It is easy to build a business case for empowering individuals in this way. Our customers' expectations are increasing. They are demanding world-class levels of performance and significant cycle time improvement.

IS is being measured on the effectiveness of its leadership in promoting an agreed-on technical strategy, the speed of its response to problems, the clarity of its communications and the value of its contributions. Meeting these kinds of expectations requires finding new ways of working that encourage openness and allow each employee to develop to full potential.

At Corning, this means IS teams make hiring and firing decisions, estimate budgets, suggest merit increases and tell us what training they need.

> I CAN'T ASK the managers, supervisors and directors in the organization to give up control unless I'm willing to do the same.

Acquired ability

This type of change does not come automatically or easily at first. It is a learning process, but one that is well worth the effort.

I remember one occasion when I brought in a new director in one area, and the people came to me and said, "Harvey, how dare you bring someone in without allowing us to interview him!"

The next time a position opened up, I made sure I didn't repeat that mistake. This time, the team went through an extensive interview process with the person proposed. In the end, this person became the team's candidate, someone they really wanted and pushed for.

This thing called empowerment is real dynamite. We have already seen measurable, continuous improvement in service quality, error reduction, operating costs and employee satisfaction. And now it is time for the next step: making changes at the top.



Betsy Lyon

We began team management within the ranks, but I can't ask the managers, supervisors and directors in the organization to give up control unless I'm willing to do the same. My role as chief information officer must also change.

Action words that have served me well over the years, such as "control," "manage" and "direct," must change to empowering verbs like "encourage," "coach" and "delegate."

If I am to achieve these goals, I must slowly but surely pull back from being a control figure and transform myself into a different kind of leader.

After the change

I see myself filling four key roles in the future:

- **MENTOR** to individuals within the IS organization, providing my perspective on career planning, relationship building and other important topics.
- **ADVISER** to other members of the IS leadership team, providing guidance on growing a service business, partnering with customers and developing high-potential IS staff.
- **CONSULTANT** to the Corning Executive Committee on the strategic and competitive use of information technology.
- **SPOKESMAN** to Corning's external customers on effective interenterprise deployment of information technology, strengthening relationships with our business partners.

This won't happen overnight. I expect it will probably take about three years. But I know I have to start because, if I am to persuade others to give up the power implicit in a hierarchical organization, I must lead by example. The entire organization will watch to see if I "walk the talk."

Shrednick is senior vice president of information services at Corning, Inc. in Corning, N.Y.

Confessions of an IS spouse

ALICE LESCH KELLY



I should have seen it coming before the wedding, when I asked my husband-to-be if he wanted to add anything to our gift registry list.

I read him my suggestions. "China, crystal, towels, sheets — anything else?"

"Yes!" Dave said, showing uncharacteristic zeal for our upcoming nuptials. "A Hewlett-Packard LaserJet printer. I think I have a picture of one on my desk."

Hmmmm.

Sure, it's great having access to a home office with as much computing power as the Pentagon and more software than can be found in all of Redmond, Wash. But sometimes, it can be trying being an IS spouse.

The first holiday after we tied the knot was one of those times. "See, I slip the Christmas cards right into the printer like this," my new husband explained proudly. "Then I do a merge with our address file. Voila! The cards are signed automatically in 14-point Old Gothic type. And the envelopes are printed in a nice 12-point Futura bold. See? We don't have to touch a pen. Now where did I put the red and green ink cartridges?"

Of course, all of our household bookkeeping is on-line. Writing a check used to be a simple matter of taking out the checkbook, grabbing a pen and writing. Now we boot up the PC, open up Quicken, load the checks into the printer, enter the name of the check recipient and the amount of the check....

The drive to build

I can see why Dave is so comfortable in the world of computers. It's all very workshop-oriented and certainly must bring out the home-improvement drive found in every Y chromosome. Without leaving his desk, my husband, who can be stumped by the prospect of hanging a picture on the wall, can immerse himself in a world of hardware, tool sets, workbenches and big iron. It's a world in which even the weak of muscle can be an empire builder.

That must be why computer people are so attracted to those railroad-building software packages. With little more than a nudge from the C prompt, the PC user can lay down miles of steel and create vast transportation networks that rival the history-making contributions of Andrew Carnegie.

My father worked for IBM for 32 years, so you can imagine how overjoyed he was when I brought home a boyfriend who worked with computers. And he was even happier when we got married. My father wasn't thinking son-in-law; he was thinking 24-hour on-call PC expert.

But their relationship has grown rocky lately. They aren't arguing Democrat vs. Republican or Toronto vs. Atlanta. To the dismay of my mother and anyone else who happens to be at the dinner table, they bicker over operating systems.

"OS/2!" cheers my father, whose blood runs royal Blue.

"Windows!" counters my husband, with Gatesian loyalty.

"OS/2!"

"Windows!"

It's like a Miller Lite commercial gone askew.

Left on the list

So, as it turns out, my husband and I did not receive a laser printer for our wedding.

"It's too bad we didn't get that printer," I said to my IS husband as we soaked up sun during our honeymoon.

"It's OK," he said. "I know how we can get the money for one."

"Oh?"

"We can return some of that china. Twelve of everything, can you imagine? Talk about unnecessary redundancy...."

Kelly, who keeps her china locked up, is a *Computerworld* copy editor.



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IBM to set identities for three PC lines

ANALYSIS

BY MICHAEL FITZGERALD
CW STAFF

The IBM Personal Computer Co. has rolled out its PC strategy, and now the question becomes: They have announced it, but who will come?

IBM has chartered its three product lines for different purposes: Personal System/1s for home and small-office buyers, PS/ValuePoints for corporations for which cost is a major concern or that want to avoid the dealer channel, and the PS/2 line for people who want everything IBM has to offer in the way of technology and service.

The real difference among the systems is not so much the underlying technology but rather the channel they sell through and the way they will be serviced.

The PS/1, a product for the masses, has three distribution channels, one for each family in the PS/1 line: The Essential sells through office products stores, the Expert through superstores and the Consultant through retailers such as Sears, Roebuck and Co. The PS/1 comes with a one-year warranty.

The PS/ValuePoint sells through both traditional computer dealers and an IBM toll-free number. Dealers sell the products for a lower price, but purchases made through IBM's direct line guarantee four-hour

Continued on page 38

Comparison point

ValuePoint series gives IBM three key PC product lines with some potential for overlap

33-MHz 486DX	33-MHz 486DX	25/50-MHz 486SLC2
8/32	8/32	8/16
211M-byte	212M-byte	212M-byte
AT	AT	MCA
5/5	5/5	5/4
Super VGA (monitor)	Super VGA (monitor)	XGA2 (card)
N/A $2,799.99*	$2,349** $2,349**	$2,855 $2,427
1 year	1 year	3 years

* From a retail store
** IBM direct

CW Chart: Stephanie Faucher

Low price not the only factor attracting customers to suites

BY ROSEMARY CAFASSO
CW STAFF

The most well-known fact about desktop application suites may well be their low prices, but some users said there is actually more to these packages than their price tags.

Users of both Microsoft Corp.'s Office and Lotus Development Corp.'s SmartSuite said the packages streamline their support. They also offer consistency across applications, help to reduce training time and encourage users to work with more applications. Microsoft began shipping Office, which includes Excel, Word, PowerPoint and an electronic-mail license, in 1990.

Lotus in turn responded with SmartSuite, made up of Windows versions of 1-2-3, Ami Pro, Freelance and CC:Mail. More recently, it rolled in its personal information manager, The Organizer.

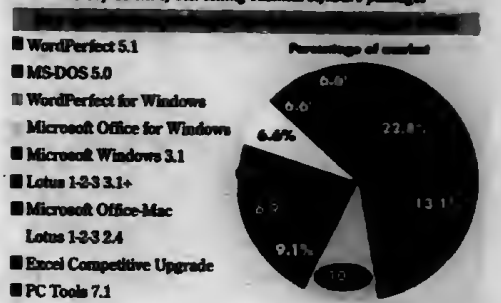
"The main reason [for licensing SmartSuite] was essentially the cost," said John Chamberlin, PC coordinator at the British Petroleum Ferndale Refinery in Ferndale, Wash. "It was pretty phenomenal — about $300 [per suite]," which translates to less than $100 an application.

However, "it wasn't until about four months later that people started blending the products and using the three packages together," Chamberlin added.

Chamberlin said he has not quantified training time saved as a result of the suite but said, "We are spending a lot less time supporting these people. Because of the commonality, the other packages come very quickly."

Finding their place

Microsoft's Office software suites established themselves in PC Research's Top 10 list of best-selling business software packages



Source: PC Research

CW Chart: Michael Siggins

He noted that users are also more willing to move beyond the spreadsheet and word processing packages they know well and try the graphics package. "There is a real increase in professionalism," Chamberlin said. "Maybe three or four people did memos that looked really spectacular. That has just snowballed."

Quality applications

Unum Insurance Co. in Portland, Maine, selected Office earlier this year. It said the key benefit has been its quality of applications. In fact, Unum did not care that it was packaged as a suite, according to Rachel Stamieszkin, manager of planning and development for distributed systems services.

"We didn't look for a suite," she said. "We picked [Office] because we thought it was the best of breed."

In fact, Stamieszkin said most of the 600 Unum users working with Office are not yet fully exploiting the application integration features. But they are working with what Unum considers the leading applications in each category. The insurance company has 5,800 users worldwide, and they will migrate to Office at their own pace, she added. Most will move from Lotus applications based on MS-DOS, so "they decide when and if they will get the value of changing their software."

Premark International, a holding company that owns companies such as Tupperware Worldwide, moved to SmartSuite this year when it switched from MS-DOS to Windows.

"Truthfully, it wasn't a cost issue at all," said Bonnie Becker, a systems analyst at Premark. "It was a service issue, and if Lotus products weren't good, we would have looked further."

Alpha database is music to composer's ears

BY CHRISTOPHER LINDQUIST
CW STAFF

Average viewers probably think little about the hundreds of pieces of music they hear while watching television shows. But it is Jonathan Wolff's job.

Wolff, owner of Burbank, Calif.-based Music Consultants Group, Inc., composes the music for several popular TV shows, including *Who's the Boss?* and *Seinfeld*.

For a long time, Wolff's music — snippets for between scenes and pieces to set a certain mood — were kept on tape and could be called up for use by the shows' producers. But finding them on a tape was not easy.

Wolff said he often found himself wanting to locate a piece of music, but he had no easy way to search through his lists. It was sometimes simpler to create new music than to search with his word processor and find the location of another piece. "It meant less time that I had to do music that absolutely had to be done," he said.

As a result, Wolff decided to have a database created where he could store and search through his music.

He asked staff member and system developer Steven Lack to meet his needs. Lack prescribed a relational database, and while he had worked with Borland International, Inc.'s dBase and Paradox products, he wanted something easier to develop with. To that end, he settled on Alpha Software Corp.'s Alpha Four.



"Everything is graphical," Lack said. "As we decide we have to modify the program, we do it."

Lack said Alpha Four also allowed him to create a completely menu-driven application that was easy for users to learn.

Lack stored the databases in five parts and created an interface that allows users to cross-reference the different databases quickly. The application lets users browse and select music cues and then create a "prelay" sheet, or list of cues for the show.

Wolff also found that by loading the database on a notebook computer he can bring it with him to dubbing sessions. If a producer decides that he does not like a particular piece of music, Wolff can look up a new piece quickly and pick another.

Lack said he hopes to create a link between the database application and a sound storage system on an Apple Computer, Inc. Macintosh. With such a link, Wolff could call up a piece on the database and immediately hear it on the Macintosh.

The current system still requires the user to load a tape and find the cue. But a totally automated system is still a ways off. For now, Wolff is happy to have just a little more time to make a little more music.

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HELP LINE

Microsoft Word



Part of a continuing series of user tips drawing from questions commonly asked of PC software vendors' customer support lines. This week's focus is on Microsoft Corp.'s Word.

Q Why don't I see my graphics on the screen when I import them into my document?

A You may be using draft view, which represents a graphic with only an empty frame.

To see if your document is in draft view, select the View menu. If s check mark appears next to the Draft command, choose the Draft command to remove the check mark.

If you are not in draft view and your graphic still does not appear, do this:
1. From the Tools menu, choose Options.
2. In the Category box, select View.
3. Clear the Field Codes and Picture Placeholders check boxes.

Q How can I border the contents of a table cell without bordering the cell?

A To border the contents of s table cell:
1. Select s portion of the table cell text.
2. From the Format menu, choose Border.
3. Under Line, select the line style for the border you want.
4. Choose the OK button.

Note: Repeat the above steps for each cell you want to border.

Q I don't want Word to display the last four files I opened at the bottom of the File menu. How can I remove them?

A If you do not want the last four files you opened to appear at the bottom of the File menu, do the following:
1. From the Tools menu, choose Options.
2. In the Category box, choose WIN.INI.
3. In the Application box, select Microsoft Word 2.0.
4. In the Option box, type "NoFileCache."
5. In the Setting box, type "Yes."
6. Choose the Set button.
7. Choose the Close button.

Q How can I find more information about fields?

A To learn general information about fields, do the following:
1. From the Help menu, choose Help Index.
2. Under Reference Information, select Field Types and Instructions.

To find information on a specific field type, do the following:
1. From the Insert menu, choose Field.
2. In the Insert Field Type box, select the field type for which you want more information.
3. Press the F1 key.

Eaton keeps on truckin' with portables

BY MICHAEL FITZGERALD
CW STAFF

GALESBURG, MICH. — Heavy-duty parts maker Eaton Corp. may like to rely on "proven edge" technology to get the most bang for its buck, but it comes close to the cutting edge in its intensive use of workstation power for parts design and its use of portables.

Eaton, No. 5 in its category in this year's *Computerworld Premier 100*, has proved that notebook and palmtop technologies work by sticking them in the competitive fires at its Truck Components Operations — North America (TCONA), a $1 billion-plus business.

Use of portables starts at the top.

Fred M. Kovalik, the company's general manager, is so fond of his Hewlett-Packard Co. 95LX palmtop that he sounds like a walking testimonial. "I'm hooked on this; I mean, I'm dead meat without it," he said.

Kovalik takes the toylike 95LX seriously; he basically runs his business from it. Kovalik has had several specialized applications built into its Lotus Development Corp. 1-2-3 spreadsheet, and he keeps "a lot of confidential financial information" on the palmtop as well.

Kovalik's custom Lotus spreadsheets were built not by his information systems department but by Phil Claussen, s marketing and engineering coordinator who happens to be computer-literate. Kovalik said he likes the 95LX because it frees him from carrying s briefcase full of paper and helps him stay organized.

Kovalik has basically stopped using the notebook computer that sits in his office. Two other executives also have 95LXs, though neither is a power palmtop user like Kovalik.

Notebook upgrades

Bigger portables are in demand in other parts of TCONA. While both the transmission division and the axle/brake division's sales and marketing forces use portables, the transmission group is ahead of the game. The axle division uses Compaq Computer Corp.'s SLTs, but the transmission group dumped 1987-vintage NEC Corp. dual-disk drive portables s year ago in favor of Compaq LTE 386S/20 notebooks.

An application developed in-house drove the move to notebooks. Larry Cook, manager of microcomputer administration and support at TCONA, said Eaton built its product specifications into a program so that when Eaton's sales representatives meet with a customer such as Kenworth Truck Co. in Kirkland, Wash., they can choose the best transmission for a specific vehicle.

"You can literally go through this and pick a transmission, such as whether you want s four-speed or s nine-speed, geared to what the customer wants," Cook said. "There were a whole bunch of things the sales force wanted to do with notebooks, but this was the one thing that was strong enough to get them to dump what we had and go to entirely new systems."

The application happened to require s Video Graphics Array screen and at least 1M byte of random-access memory, which ruled out the older NEC machines.



Kevin Horan

Larry Cook *says Eaton's Truck Components Operations staffers use Toshiba T4400s while testing trucks' gears and antilock brake systems*

The reps helped choose the notebooks in s six-month process during which they re-evaluated the notebooks Cook had selected and eventually picked his same choice. Cook said that while this process saved money because Compaq cut prices in the interim, it also cost Eaton six months of increased productivity.

While the re-evaluation seemed redundant, Cook said he did not mind.

"They were the ones who had to be comfortable carrying this into customers' offices," Cook said.

The dozen members of the transmission sales force also opted for expansion stations, which keep them connected to TCONA's 320-node local-area network for electronic mail, printer access and centralized file storage and sharing.

TCONA has also created an on-line database that takes an 8-ft long shelf of three-ring binders filled with historical data, and the reps can access this information through the network.

TCONA makes its heaviest use of portables in its testing group. The division's research engineers have two dozen portables — 12 Intel Corp. 80286-based notebooks from Toshiba America Information Systems, Inc., 10 Compaq SLTs and two Toshiba T4400s — dedicated to data acquisition and analysis.

Eaton applies the notebooks to different purposes. "Processor speed means nothing to data analysis people," Cook said, so they use the 286- and 386SX-based notebooks for their tests, which largely study how s truck's gears react to changes in temperature and vibration.

The T4400s, based on the 486SX, are used during actual road tests to determine how trucks' transmissions, brakes and axles work while they are on the road.

"When they're actually doing on-the-road testing of shifting gears and antilock brake systems, that requires s higher level processor because the data has to come in that much faster," Cook said.

ON SITE

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Galesburg, Mich.

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IBM to set identities for PC lines

CONTINUED FROM PAGE 35

on-site service, while buying from the dealer nets service from the dealer. The products carry a one-year warranty from either source and a 30-day money-back guarantee.

The PS/2 line sells through dealers, value-added resellers and IBM's direct sales force. Distributors such as Merisel America, Inc. also push the PS/2. These premium PCs carry a three-year warranty and same-day, four-hour on-site service, as well as support from IBM's regional education centers.

Even IBM expects to see customers from one category buy PCs targeted at others, which should do particular damage to the flagship PS/2 line as corporate buyers shift to less expensive IBM alternatives. IBM officials act nonchalant toward the prospects of slumping PS/2 sales, saying they do not mind as long as a PS/2-type customer buys something from IBM. In fact, IBM officials have said they expect to see PS/2s make up no more than 30% of PC sales in the next year.

There are some substantive technological differences among the IBM lines.

The PS/1s come bundled with a variety of software, including Microsoft Corp.'s Windows on the low end and OS/2 on the high end, while the ValuePoint series includes OS/2 on its high-end models. PS/2s come with OS/2.

FOR THOSE SHOPS that have standardized on Micro Channel Architecture, the ValuePoint represents a dilemma.

On the hardware side, the PS/1 and ValuePoint are largely the same, but the PS/2 features Extended Graphics Array-2, a Small Computer Systems Interface controller for faster hard drive performance and a 2.88M-byte disk drive. It was designed to be International Standards Organization-compliant.

What may bring companies to IBM is its pricing, particularly on the ValuePoint line.

"We're looking at the ValuePoint for our agents. We want a competitive desktop machine with both the performance and the price, and those seem to qualify," said Richard E. Nelson Jr., vice president of agency systems at New York Life Insurance Co. Nelson said the PS/2s simply cost too much for his agents to seriously consider them.

Still, for those shops that have standardized on Micro Channel Architecture, the ValuePoint represents a dilemma. The ValuePoint appeals to those buyers because of its pricing, but it rankles the information systems schema because it uses the IBM PC AT bus.

"We've said we're going to be a Micro Channel company and an OS/2 shop, so this ValuePoint does pose us some different problems," said W. B. Lovan, assistant buyer of indirect materials at Caterpillar, Inc. in Peoria, Ill. Lovan said he expects Caterpillar to purchase ValuePoint systems, "probably in those areas ... where we do not need the high-powered functionality that you may have in a PS/2. If I can get the value of IBM behind a quality low-cost PC, I'll lean that way."

PC Expo product report

BY MICHAEL FITZGERALD
CW STAFF

CHICAGO — The recent PC Expo Chicago show attracted almost 30,000 attendees and spawned numerous introductions of portable computers, desktop machines and software with multimedia and OS/2 flavors.

New products that were on display at the show included the following:

- **Beaver Computer Corp.** (BCC)'s 6.6-pound Avanti Communications Corp. 486 notebooks. These continue BCC's elegant designs and feature a new sloped keyboard.

The 486 uses Cyrix Corp.'s 486SLC chip and offers a 200M-byte hard drive. A different version uses a built-in AT&T digital-signal processor and V.32 bis modem. BCC expects street prices to be less than $3,295.

- **SAS Institute, Inc.** showed five new pieces of its SAS System for Information Delivery, which will come out when SAS releases Windows and OS/2 versions of its SAS System in early 1993. These components include a spreadsheet, an executive information system, a natural language interface and two new data analysis modules.
- **SPSS, Inc.** announced SPSS/PC +5.0, a $295 upgrade package.
- **NEC Technologies, Inc.** announced a new laser printer, the 10-page/min. Silentwriter Model 97, which costs $2,149.
- **IBM** showed an OS/2 version of its Screen Reader, which vocalizes screen information. Previously, this product for the visually impaired had worked only under DOS.
- **Quill Corp.**, a large distributor based in Lincolnshire, Ill., came out with its second round of private-labeled PCs, the Q-Tech line. Starting price for a 486SX-based PC is $2,499. It includes an 80M-byte hard drive, a noninterlaced Super VGA monitor, and it is bundled with Windows 3.1 and Borland International, Inc.'s Quattro Pro for Windows.
- **Falcon Systems, Inc.**, based in Prospect Heights, Ill., released two new computers. One is a $2,295 Multimedia System, based on a 20-MHz 486SX, and the other ia a 50-MHz 486DX-based server with 8M bytes of random-access memory and a 200M-byte hard drive for $2,895, the company said.

This is an honor.

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For the second consecutive year, J.D. Power and Associates has ranked Apple highest among Personal Computer Companies in Overall Customer Satisfaction. One more reason to choose Apple® Macintosh®. The easy way. Every Macintosh personal computer is designed to make it easy for you to do everything you have to do. Plug one in, and you're ready to work. It's easy to set up.

For an authorized Apple reseller near you, call 1 800 538 9696, ext. 435. In Canada, call 1 800 667-4713, ext. 435. J.D. Power and Associates' 1991 and 1992 Computer End User Satisfaction Studies. 1991 study conducted among 2,575 business and 1,345 business sites. ©1992 Apple Computer Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best."

NEW PRODUCTS

Software application packages

Approach Software Corp. has started shipping Approach 2.0 for Windows, an upgrade to the company's Microsoft Corp. Windows-based database.

More than 50 new features have been added to this release, including the capability for a seamless mail merge from within Approach and the ability to locate and eliminate duplicate entries, as well as automatically generate pull-down value lists from the same or other databases.

Version 2.0 also provides PowerKeys that deliver 100% compatibility to SQL Server, DB2 and FoxPro, the company reported. A new PicturePlus feature enables users to store graphics, charts, sounds and entire documents.

The product costs $399.

Approach Software
311 Penobscot Drive
Redwood City, Calif. 94063
(415) 306-7890

Optimum Electronics, Inc. has introduced PC PassKey, a PC security product.

According to the company, PC PassKey was designed to eliminate both accidental and deliberate security breaches. The product consists of security software that monitors all system activity and permits only authorized use of all PC resources.

PC PassKey offers a variety of optional features including hard disk encryption, the ability to encrypt floppy disks, password protection and system monitoring. A virus protection feature offers protection from viruses attacking the system and stops them from spreading.

PC PassKey costs $355.

Optimum Electronics
425 Washington Ave.
North Haven, Conn. 06473
(203) 239-6098

Peripherals

Sysgen, Inc. has started shipping the Sysgen Super21 floptical drive.

Capable of storing up to 21M bytes on a single 3½-in. disk, the Super21 drive is read/write compatible with existing 720K-byte and 1.44M-byte disk, the company reported. The drive is accessible to all DOS and Microsoft Corp. Windows programs and has the ability to archive, back up and distribute data with one DOS-compatible drive. Super21 floptical drive is a complete external subsystem that also includes an adapter and installation software.

A twin-pack of the disks costs $39.95; a five-pack costs $99.95.

Sysgen
556 Gilbraltar Drive
Milpitas, Calif. 95035
(408) 263-4411

Systems

CompuAdd Express has introduced five new PCs.

According to the company, CompuAdd Express 425CX is configured with 2M bytes of random-access memory, a 40M-byte hard drive and one disk drive. Model 433DLC includes 4M bytes of RAM, a 200M-byte hard drive and a dual-disk drive. Model 450DX2 has the same configurations as 433DLC and is based on Intel Corp.'s speed-doubling technology.

Model 325SX has 2M bytes of RAM and a 40M-byte hard drive, and the Model 340DX includes 4M bytes of RAM and a 120M-byte hard drive.

Microsoft Corp.'s Windows 3.1, MS-DOS 5.0 and a mouse are included with each model.

Pricing begins at $995.

CompuAdd Express
12306 Technology Blvd.
Austin, Texas 78727
(512) 219-1800

Keydata International, Inc. has launched a line of notebook PCs.

Keynote 386SX-25 is an Intel Corp.-based computer that is configured with 2M bytes of expandable random-access memory. The product has a 640 by 480 high-resolution Video Graphics Array screen and includes ports for an external keyboard and monitor.

Another Intel-based product is the Color Keynote 386SL-25. The Color Keynote comes with 4M bytes of RAM and an 80M-byte drive, features a 64K cache and is capable of displaying up to 256 colors. The Keynote 486 has 4M bytes of RAM, an 80M-byte high-speed drive, a 10-in., supertwist backlit LCD display and a recessed trackball for fast cursor operation.

Prices start at $1,395.

Keydata International
111 Corporate Blvd.
S. Plainfield, N.J. 07080
(908) 755-0350

Franklin Electronic Publishers, Inc. has introduced the Digital Book System-1 (DBS-1), a handheld PC.

The DBS-1 has 16-bit architecture and is capable of storing up to 90M bytes of information in two removable interactive "Digital Books." The 4.6 oz. product uses Franklin's proprietary data compression system, where up to a 5-to-1 reduction ratio in physical memory requirements is allowed.

The DBS-1 has 32K random-access memory and is powered by four lithium button cells.

The product costs $199.

Franklin Electronic Publishers
122 Burrs Road
Mount Holly, N.J. 08060
(609) 261-4800

Operating systems

IGC has announced Version 2.2 of its VM/386 MultiUser PC-based operating system.

The product was designed for point-of-sale operations and database-intensive markets. It includes new features such as virtual COM ports, file-transfer capabilities, file system improvements and copy protection. According to the company, VM/386 MultiUser has architecture similar to a mainframe; its processing power is consolidated in one 386 or 486 host PC.

VM/386 MultiUser 2.2 costs $695 for the five-user version and $1,049 for the 32-user version.

IGC
Suite 108
1754 Technology Drive
San Jose, Calif. 95110
(408) 441-0366

This is a trend.



Easy to learn. Easy to expand. In fact, Macintosh is still the only computer engineered from the first chip to work that way. Which may also explain why Apple has sold more personal computers this year than any other company in the world. So if you're looking for a computer that's easy to use, there's really only one way to go. Macintosh. The power to be your best. Apple

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USL's Destiny: Unix for the masses

Evaluators say this version of Unix — which can be customized to run on everything from laptops to desktops to supercomputers — could make the operating system palatable to commercial users

NEW PRODUCT IN-SITE

Computerworld's New Product In-Site is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

UNIX SYSTEM LABORATORIES, INC.'S SYSTEM V RELEASE 4.2

- Unix V 4.2, also called Destiny, won raves for its new graphical user interface. Evaluators found the interface to be a big time-saver in everything from installation to adding devices and users to a Unix system.
- The Unix V 4.2 graphics library, Motif OpenLook Intrinsics Toolkit, is a boon when running packaged applications or developing new programs. However, some OpenLook applications may require recoding.
- Evaluators were unanimous that Unix V 4.2 should be used on 486 rather than 386 platforms. They said the 386 does not provide even minimally adequate performance.

For years, there have been rumors and hopes that Unix would make a once-and-for-all entrance into commercial computing. But detractors have bristled at the operating system's arcane commands and absence of standards. For example, *sed*, *awk* and *grep* have not been favorites in mainstream business computing.

The shipment of Unix System Laboratories, Inc.'s (USL) System V Release 4.2 — also known as Destiny — could bring an end to anti-Unix sentiment.

Unix V 4.2 is USL's catchall description for the latest version of the operating system. Unix V 4.2 can, theoretically, be customized to run on platforms as diverse as laptops and supercomputers.

USL does not sell its "generic" Unix V 4.2 to end users. Instead, it licenses the source code of the operating system to a variety of hardware manufacturers for implementation on their own computers. The exception — and the subject of this evaluation — is the version of Unix V 4.2 created to run on Intel Corp.'s 80386 and I486 PCs.

USL will not sell the Intel version of Unix V 4.2 but will license the product to vendors such as Univel, Inc., the joint partnership of USL and Novell, Inc., and Consensys Corp., which sells a version supporting Transmission Control Protocol/Internet Protocol networking for Microsoft Corp.'s Windows and Unix. However, USL put the generic Intel version through extensive preliminary testing, and that test version is the subject of this evaluation.

Unix V 4.2 is more than another Unix. It includes a graphical user interface (GUI) and a host of enhancements that insulate users and systems administrators from the internal workings of the operating system. Still, die-hard fans of VI and *grep* will still have access to the Unix command line.

For those needing to escape the frivolities of Unix commands, Unix V 4.2 could prove a blessing. The technical product evaluators participating in this survey were "shocked" at the changes wrought on the Unix interface by Unix V 4.2. Experienced Unix administrators and users, the evaluators found Unix V 4.2's graphical interface to be the first of many enhancements that will unleash them from tedious technical chores and free them to tackle business computing issues. Unix, they said, is no longer the intimidating and time-consuming "challenge" that it historically has been.

All of the evaluators participating in this survey were either conducting or finalizing evaluations of USL's Unix V 4.2. All had been beta-test sites for the operating system — two for more than six months. Final versions of Unix V 4.2 (Release P14) had been available to the evaluators since early September.

In a nutshell, the evaluators had few complaints with Unix V 4.2. One evaluator — the federal agency — had difficulty porting OpenLook applications originally written for a Sun Microsystems, Inc. SPARC machine to the Unix V 4.2 environment. The problem, apparently, was that low-level graphics functions used on the SPARC system were not available in the Unix V 4.2 Motif OpenLook Intrinsics Toolkit, which USL said will automatically support almost any OpenLook or Motif application. The federal agency evaluator uncovered the meaning of "almost any" application and was rewriting sections of the offending programs. "We like Motif better anyway," he said.

The research facility and the federal agency both had substantial installations of Unix workstations with a variety of Unix implementations already in in place. The total installed base exceeded 25,000 users at both sites. The insurance company had about 300 to 400 Unix users on a variety of mainframe and midrange systems. The systems integrator included a diverse mix of hardware — from Unisys, Inc. mainframes to clone PCs made in Taiwan — in its customer accounts.

Unix System Laboratories' System V Release 4.2

Ratings are based on user expectations on a scale of 1 to 5, where 1 is below expectations and 5 is above expectations. Ratings are presented in order of importance to users.



Unix V 4.2 includes a "journaling" file system that is said to protect applications from sudden power failures and systems glitches. Users commented that in other versions of Unix, the same feature often caused system start-up times of more than 12 minutes. Under Unix V 4.2, according to the systems integrator, start-up times had generally been reduced to less than one minute.

Systems integrator: "No problems. The file system is a lot more robust in a power failure and recovers very well."

SITE PROFILES

Installation descriptions for users who evaluated Unix System Laboratories' Unix V 4.2

	Federal agency	Research facility	Insurance company	Systems integrator
Hardware platform	AT&T 6386 25 MHz	ALR 80386 50 MHz	IBM & Compaq 386, 25 MHz	Acer 486SX 33 MHz
Using previous version	No	Was beta-test site	Yes	Yes
Application types	Custom-built & OpenLook 4.0	Creating development tools	Interoperability testing	Tuxedo, Lotus, X Windows
Reason for using Unix V 4.2	Platform for cooperative network	Best Intel-based Unix	Reduce Unix learning curve	Cheap X-Station Standard hardware

Methodology: Product ratings are based on evaluations from four user sites (profiled above). These are early users of USL's Unix V 4.2. The users are members of Computerworld's Product Evaluation Council.

RELIABILITY

The evaluators found Unix V 4.2 to be remarkably reliable, with no significant downtime except in the earliest pre-release versions. They said Unix V 4.2 was, in fact, more reliable than IBM's OS/2 2.0.

COMPATIBILITY

Given that Unix V 4.2 is an industry-supported offshoot of AT&T's Unix Software Operation, the original creator of Unix, it would be difficult to imagine a USL Unix that is not compatible with industry standards. An "incompatible" USL Unix would, in essence, have to be incompatible with itself, since USL Unix is "the one and only Unix." However, it is conceivable that USL Unix could evolve in such a manner as to outmode existing applications. That was the thrust of the compatibility question. It becomes more important as graphical applications proliferate using a

variety of graphic protocols and standards.

In addition to its compatibility with previous versions of Unix (USL calls this "the Unix V 4 family," which includes Unix V 4 and Unix V 4.1), Unix V 4.2 includes a new graphical tool kit based on the X Window System standard.

The Motif/OpenLook Intrinsics Toolkit allows both OpenLook- and Motif-based applications to run, unaltered, in Unix V 4.2. However, some evaluators found that applications written for some versions of OpenLook required substantial revision in the graphics area.

In the experience of the evaluators, all character-mode applications, device drivers and packaged "off the shelf" applications ran unaltered on Unix V 4.2.

Federal agency: "Some higher level calls from OpenLook were grossly modified. Code still won't compile or run because they've changed the libraries."

Insurance company: "The interoperability tests that we run on all systems in the lab ran on Unix V 4.2 with no problems."

Research facility: "You're not going to take Unix V 3 application libraries, especially those that use memory management, and expect to compile something that's going to work."

Systems integrator: "It's good that you can change the configuration to go from OpenLook to Motif. We've tried packaged software and remote systems running X Windows. We haven't had any problems with the software we've tried."

PERFORMANCE

The evaluators said Unix V 4.2 ran precisely as expected on 486-based systems. They were generally not pleased with performance on 386 platforms of any kind.

Federal agency: "A 386, 25-MHz machine just doesn't cut it. I can fall asleep waiting for something to happen."

Systems integrator: "The X Windows environment requires heavy processing. You need a 486 machine."

TECHNICAL SUPPORT

Unix installations traditionally have relied on internal technical expertise to resolve difficult problems. Technical support generally has referred to the ability of Unix administrators, programmers and support staff to pore through and understand volumes of Unix technical manuals. And because USL sells Unix V 4.2 only to hardware manufacturers and other resellers, it does not provide technical support beyond that required to port the operating system to different hardware platforms.

As experienced Unix users and as preliminary test sites, the evaluators did not have tremendous need for technical support. However, the evaluators generally gave Unix V 4.2 high marks for documentation and on-line Help systems.

A new "drag and drop" icon system, for example, made printer configuration little more than a matter of moving the icon to the appropriate location on the desktop.

Federal agency: "On administrative functions like adding users, they've done a super job. Doing that in the past has been cryptic, but you don't have to know much at all to meet your goal now."

Insurance company: "It allows us to get back to answering business needs without having to play with operating systems."

Systems integrator: "The menu-driven installation guide is helpful. The event-driven hypertext help engine is excellent."

INSTALLATION

Unix installations usually require a complex mix of disk swapping, tape drive restorations, device configurations and a gamut of administrative programs. The difficulty of this process is multiplied by the requirement that system hardware be supported by custom device drivers; that storage devices be partitioned in a complex fashion supporting the Unix file system; and that users be added to a system profile to accommodate shared files and multitasking. Standard Unix utilities are not highly regarded for their assistance in such matters.

With its graphical approach, Unix V 4.2 eliminated many of these complexities, according to evaluators.

Federal agency: "You can get up and flying, and as you experience problems or learn more, you can tune parameters later. Before, you had to know at the front end or you couldn't get the system up."

Insurance company: "You don't have to be a Unix person, and you can install it in two hours."

Systems integrator: "All the graphical administration features are great. Absolutely amazing. People are in disbelief that this is a Unix system."

PROGRAMMING

Because Unix V 4.2 is in all respects "standard" Unix, writing applications for it is no different than for previous versions of the operating system. Evaluators said they anticipated no changes in programming practices or methods to work with Unix V 4.2. An enhanced, graphical debugger was noted by all the evaluators.

Research facility: "Their source code debugger seems to be more robust and easier to use."

Systems integrator: "You can wrap the debugger right around a process."

SOFTWARE CONVERSIONS

All evaluators reported that standard Unix programs written for the "generic" Unix V 4.2 recompiled and ran without any difficulty. The same was true for graphical applications written for X Windows and Motif. Some OpenLook applications, as noted above, required minor revision. Packaged application software ran without any difficulty, the systems integrator reported.

Federal agency: "Drivers which I first developed in 4.0 ported right over. We used a lot of OpenLook library calls [in older applications] that just aren't supported."

Systems integrator: "Porting is not an issue."

FACTS FACTS

Unix V Release 4.2

- Hardware platforms: Intel 386 and 486, SPARC and MIPS.
- Future platforms: RS/6000, DEC Alpha and HP.
- Support for common DOS and Windows emulation utilities.
- Graphical "point-and-click" environment.
- Multiple GUIs, including OSF's Motif and Sun's OpenLook.
- Adobe Type Manager embedded in the operating system.
- Optimized X Window System server.
- Smart interruptible installation routines.
- Graphical administration features.
- Dynamic kernel modules allowing on-line device installation.
- Meets Unix International desktop standards.

EASE OF USE

The best description for evaluators' reactions to Unix V 4.2 is "astonishment." All commented repeatedly on the improvements in ease of use made by the new graphical user interface.

Federal agency: "Unix has always been the way we wanted to go, but up until USL came out with Unix V 4.2, it was very alien for people to want to use and very obtuse."

Insurance company: "Anybody will be able to use it in a couple hours if they come from a graphical, windowing paradigm."

Research facility: "Users aren't going to be able to destroy any of the system files. For me, that's a blessing."

Systems integrator: "People who have used the Windows environment or OS/2 or a Macintosh soon pick up the [Unix V 4.2] file manager and [other utilities]. Compared to Unix 3.2, it's light years ahead."

RANGE OF SERVICES

Unix V 4.2 includes all standard Unix utilities. In that sense, it did not exceed the expectations of the evaluators. However, they considered easier access to these utilities to be the biggest improvement of all.

Insurance company: "There isn't enough time to test all of the utilities, at least in our world. But [of those tested] they've simplified them to such a degree as to make them trivial."

Research facility: "They haven't enhanced the services that much, but they've stunningly increased the ability of less experienced people to use them."

Systems integrator: "The only thing missing is an X.25 product. That's something we'd like to get ahold of."

Reported by Michael L. Sullivan-Trainor and Garry Ray, CW staff.

USL RESPONDS

This is USL's response to issues raised in this evaluation.

- **OpenLook portability:** OpenLook is completely upward-compatible with Unix V 4.2's Motif OpenLook Intrinsics Toolkit. Moving from OpenLook to Unix V 4.2 involves a simple recompile. Any difficulties might have stemmed from moving an application from a Sun SPARC platform to an Intel platform. It is possible that some subtle differences could occur in such a platform move. The difficulties could not have come from a move from OpenLook to the Motif OpenLook Intrinsics Toolkit.
- **Packaged software:** We are working directly with 50 top independent software vendors and their applications. We are also working together with top systems vendors and Univel [the joint partnership of USL and Novell, Inc.] to reach independent software vendors. This is already proving to be effective, as we are able to leverage the strengths and longstanding relationships of other companies.
- **Availability:** USL does not sell directly to end users. We sell to systems vendors and to Univel. We have been the source of Unix for over a decade. Our strategy is to provide the basis for open systems. Therefore, we make the operating system widely available to a myriad of vendors rather than trying to dominate distribution and capture the end user.
- **Unix in business:** Momentum is building for Unix in general-purpose office computing. The rightsizing movement naturally lends itself to Unix. People are moving away from proprietary environments.
- **Minimum configuration:** Our recommended minimum configuration is just that: a minimum for the foundation set.

COMPUTERWORLD PRODUCT EVALUATION COUNCIL

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IBM

COMMENTARY

David Coursey

Not really a Notes killer



Forget you heard the rumor that Microsoft's new Windows for Workgroups is Bill Gates' secret weapon for killing Lotus' Notes. That's not true. However, Lotus does need to stop positioning Notes as "all things groupware" and better communicate what Notes really does.

You can thank the PC trade press for latching onto the notion that Windows for Workgroups — which about half the time people manage to call Word for Windows by mistake — is a "Notes killer." Examining how this happened helps to address why Notes needs to be repositioned, even re-architected, if it's to remain a success.

Here's the story:

Since Notes' introduction, Lotus has gone to great pains to portray Notes as a great conferencing tool. If you're familiar with bulletin boards and CompuServe, the idea of leaving a message and having others leave responses, creating a message "thread," is nothing new to you. But because lots of supposedly savvy IS people — and especially their bosses — had never seen a CompuServe forum, people went gaga over Notes conferencing. So to many people, Notes and LAN-based conferencing are one

Continued on page 46

Lotus will not provide single mail engine

BY LYNDA RADOSEVICH
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. has pulled back from plans to integrate its electronic-mail and groupware software and no longer intends to provide a single mail engine.

The move is an apparent shift from a three-phase strategy Lotus outlined last spring for bringing together its CC:Mail E-mail software and Notes groupware. The plans included merging the products' back-end mail transport and message storage abilities and eventually offering a single mail product with elective Notes features.

CC:Mail, with 2 million users, is one of the leading E-mail packages; Notes has 200,000 users, according to Lotus.

"You can put the common back-end concept aside," said Justin Fielding, a Notes product manager. "We got strong feedback that users love both products, and they don't want us to hamper the strength of either architecture."

Instead, the company will take a modified approach.

"We are stressing that the two products work as synergistically as possible while preserving two separate products," Fielding said.

For example, a new Lotus Mail Exchange Facility is now shipping that preserves text formatting and graphics attachments in messages sent between the two products. The previous gateway seamlessly exchanges text but does not necessarily preserve fonts, colors and formatting.

The exchange facility also provides directory synchronization so that CC:Mail and Notes directories automatically update each other when users are added or deleted from one, for example.

More features

With Notes 3.0, which is expected early next year, there will be additional enhancements, including shared administration tools and an option to choose CC:Mail as the mail package within Notes, which comes with its own message system.

One reason for the change in strategy was that users were not clamoring for Notes/CC:Mail integration.

"I know there were small nuisances in transferring messages, such as inconsistencies in formatting, but nothing that was a major issue," said Alan Bidgoli, a Notes technical support person at the National Academy of Sciences in Washington, D.C. The academy runs both Notes and CC:Mail using a gateway to communicate between the two products. "It already seems seamless to the users," he said.

Another reason is that a merger did not make marketing sense for Lotus, said David Marshak, vice president and senior consultant at the Patricia Seybold Group in Boston. He pointed out that if CC:Mail, which sells for about $100, offered many of the same capabilities as Notes, which sells for about $500 per node, Lotus would have a hard time selling Notes.

Marketing did not enter the discussion to change plans, said Cynthia Lavoie, a Notes product marketing manager. "It was a technical decision," she said.

Lotus discovered that the technologies behind E-mail and workgroup applications are very different and did not want to compromise each product's architecture from doing what it does best, she said.

Even with tighter integration, the packaging of Notes and CC:Mail together may not be in the cards, according to Marshak. The introduction last month of BeyondMail for Notes from Beyond, Inc. — a Microsoft Corp. Windows-based messaging system that gives non-Notes users limited participation in Notes conversations — shows that other packages besides CC:Mail "can integrate with Notes as well or better than CC:Mail," Marshak said.

IS releases promoter from hardware shackles

BY MARYFRAN JOHNSON
CW STAFF

NORWALK, Conn. — The next time some nice lady hands you a coupon in the supermarket, think of Actmedia, Inc. Chances are, she works for the company.

As the industry leader of the in-store advertising and promotional business, Actmedia virtually invented the concept, 20 years ago, of providing marketing services on the premises of supermarkets, chain drugstores and mass merchandisers.

Today, the company is reinventing its information systems as it jettisons 6-year-old proprietary gear from Wang Laboratories, Inc. for a Unix-based client/server network based on Oracle Corp.'s relational database management system.

"One thing that really pleases me these days is I'm no longer a prisoner of my hardware vendor," said James Klump, senior vice president of information ser-

Continued on page 47

ON SITE

Actmedia
Norwalk, Conn.

- **Challenge:** To enable this in-store marketing business to respond more nimbly to market changes by replacing outdated Wang minicomputers and applications with a $4.5 million open client/server architecture.
- **Technology:** Oracle relational database management system and 4GL development tools and a Novell network of about 200 PCs anchored by a Unix-based server (choice still pending).
- **Timing:** Past year spent developing database model and design; installing first production server in January; final rollout expected by end of 1993.

By the end of this week Computerworld readers will have spent over $70 Billion on Information Technology this year – representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD

DEC brings NAS to SunOS

BY MELINDA-CAROL BALLOU
CW STAFF

Digital Equipment Corp. recently announced a Network Application Support (NAS) package for Sun Microsystems, Inc. platforms that will allow Sun users to integrate applications across platforms.

One of the understated aspects of the introduction was that with this NAS 250 software, sites will be able to use the Sun workstations as servers to create an integrated environment without using DEC hardware.

The product's release exemplifies DEC's commitment to software and NAS, regardless of the hardware platform on which it is running, said Dennis Phelan, NAS marketing director at DEC.

"I've always liked the product, but my hang-up was that you had to have DEC equipment somewhere in order to run it, and now they've divorced themselves from that," said Rikki Kirzner, principal analyst at Dataquest, Inc., a market research firm based in San Jose, Calif. "If they can figure out how to get [NAS] to take off, it could solve the many interoperability headaches that vendors and users are facing."

Included in NAS 250 is the Open Software Foundation's Motif user interface and DEC's Application Control Architecture (ACA) Services and Compound Document Architecture (CDA) Services.

ACA Services is a set of object-oriented facilities for launching and linking applications across a networked, heterogeneous environment. Users could link a spreadsheet on a PC with a mathematics application running on a Sun machine.

Big player

ACA Services makes up a substantial portion of the dynamic application programming interface standard for the Object Management Group's Common Object Request Broker Architecture, facilitating the process for users building object-oriented applications.

CDA Services are a set of runtime services for creating, storing, transporting and interchanging compound documents in mixed environments.

DEC also announced Version 2.0 of the NAS 200 and NAS 300 for VMS and Ultrix servers and of NAS 250 and NAS 400 for Open VMS. New with Version 2.0 is support for ACA Services and expanded support for Microsoft Corp. Windows and Apple Computer, Inc. Macintosh systems, DEC officials said.

"If you look at NAS and what it tries to be — a solution for all the heterogeneous problems in the world — what this announcement does is position NAS as a foundation product for DEC," Kirzner said.

NAS 250 for the SunOS costs $265.



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Novell offers TCP/IP gear

BY MICHELE DOSTERT
CW STAFF

SAN FRANCISCO — Demonstrating the strength of its commitment to Unix, Novell, Inc. has announced new Transmission Control Protocol/Internet Protocol (TCP/IP) networking products to integrate PC local-area network users into the Unix networking world and manage them once they are there.

At Interop '92, Novell announced Version 4.1 of its LAN WorkPlace for DOS product, which allows DOS and Microsoft Corp. Windows users to connect to Unix or Novell NetWare servers via the TCP/IP suite. LAN WorkPlace for DOS is installed directly on the desktop and may be used with other LAN operating systems as well as NetWare.

Reflecting the growing strength of Unix-based Simple Network Management Protocol (SNMP) in the PC world, LAN WorkPlace 4.1 has added an SNMP agent loaded at the workstation. Any PC running LAN WorkPlace 4.1 can be managed by any SNMP-based network management system.

Remote possibilities

The new version also adds support for remote computing, using Unix standard protocols, and improved Windows and Unix File Transfer Protocol support. LAN WorkPlace 4.1 is slated to ship in December. The product is priced at $12,995 for 100 users.

For large NetWare installations where centralized administration is an issue, Novell also announced a new server-based connectivity product, LAN WorkGroup, that provides NetWare users with concurrent access to both Unix and NetWare file and print services.

LAN WorkGroup contains the same applications and utilities found in the client-based LAN WorkPlace. At a price of $12,995 for 150 users, LAN WorkGroup is also considerably cheaper on a per-user basis than LAN WorkPlace.

"LAN WorkGroup's centralized installation and administration allow us to set up networks much more quickly and efficiently," said beta-test site user David Willis, manager of network systems at the American Red Cross in Washington, D.C. "It lets us expand access to our remote networks without paying a heavy technical support penalty."

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Microsoft ships revised LAN Manager for Unix

Despite its long list of OEMs, industry observers do not predict success in LAN marketplace

BY MICHELE DOSTERT
CW STAFF

Microsoft Corp. recently began shipping Versioo 2.1A of its LAN Manager for Unix to OEMs, but users might oot see much impact because OEMs may be too distracted by their Novell, Inc. NetWare sales to take much notice, analysts said.

Microsoft's OEM version includes all the functionality found in LAN Manager 2.1, plus many of the enhancements Microsoft will ship with LAN Manager 2.2, such as s new Windows Network Administration program, a terminate-and-stay-resident Print Statioo and support for Microsoft's Windows 3.1 and IBM's OS/2 2.0 clients.

Microsoft has a long list of OEMs currently licensing its LAN Manager for Unix product, but most industry watchers said they do oot expect LAN Manager for Unix 2.1A to have great success in the local-area network marketplace.

Hard sell

"If you look at Microsoft's list of OEMs, you'll see that most are also selling and supporting Novell, Inc.'s NetWare or NetWare for Unix products," said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass. "None of those OEMs are really pushing it as their strategic platform of choice. And while LAN Manager for Unix makes a nice integration tool for mixed LAN Manager/Unix environments, there just aren't that many of those environments out there."

"Our goal has been to eveottually synchronize the Uoix LAN Manager releases with the OS/2-based LAN Manager releases," said Robert Kruger, Microsoft's group manager for Corporate Network Systems. "We will shortly be releasing add-oo products to LAN Manager for Unix, including Macintosh services and remote access services."

Meanwhile, NCR Corp., which co-developed the Unix product with Microsoft, is already shipping oew versions of it's StarGroup LAN Manager for Unix 2.1A to customers.

NCR has enhanced the basic LAN Manager for Unix 2.1A with an Apple Computer, Inc. Macintosh server, multiprocessing support for the NCR System 3000 servers and a unique, server-based interoperability feature for NetWare, the market-leading operating system sold by Novell.

When NCR's StarGroup Server for NetWare clients is installed oo a StarGroup server, NetWare clients will be able to access file and print services on StarGroup servers while remaining in their familiar NetWare environment.

Beta-test users of StarGroup LAN Manager for Unix 2.1A said they were pleased.

Marianne Levandoski, network architect at AT&T's tax department in Morristown, N.J., has a mix of Unix, DOS and Windows systems. NCR's take on Unix 2.1A gives her s simple translator that brings the two environments together, she said.

Kevin Wallace, s network analyst at Eastern Kentucky University in Richmond, Ky., said he is especially pleased with StarGroup's new Macintosh server, which lets Macintosh users access files and printers on LAN Manager for Unix networks.

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APPLIED BUSINESS TECHNOLOGY

Coursey

CONTINUED FROM PAGE 43

and the same.

Unfortunately, conferencing is not the best example of what Notes is about, although it is very easy to demonstrate and makes nice use of the replication engine, which copies the entire conference message base onto the hard drive of every user. So when Microsoft showed a conferencing application running atop Windows for Workgroups, some reporters latched onto it as a "Notes killer." To their credit, Microsoft executives didn't push the description, although they didn't argue much with it, either.

If all Notes was good for was conferencing, the "killer" designation might be true. Instead, Lotus has created a powerful object store (that means database in objectese) designed specifically for unstructured information. And this is why some very large companies are using Notes for maintaining client records, including every contact anyone at the company has ever had with the customer.

Notes is also a nice repository for multimedia and reference information, but its relational capabilities aren't really up to snuff.

Not alone

Those distinctions didn't really matter until Microsoft entered the fray. Uotil theo, workgroup applications were essentially a one-horse town, and Notes was alooe in the stable. Now, of course, Microsoft has announced plans to add workgroup underpinnings to its operating environments.

This is good for users but bad for Notes. That's because when Notes was built, designing workgroup software meant building your own messaging, user directories, development tools, security and other features right into the application. Lacking the necessary plumbing, Lotus had to build its own. That is just fine until the city inspector shows up on your doorstep and red-tags your house for noostandard plumbing.

Red-tagging is exactly what Microsoft is doing to Lotus, and that explains why Windows for Workgroups will opeo the way for Microsoft and some opportunistic third parties to do some serious damage to Notes.

To avoid this, Lotus oeeds to position Notes as the tool of choice for specific types of workgroup applications and then admit to its limitations, especially as they relate to structured data.

More importantly, Lotus will be forced to break Notes into its component pieces, allowing the Notes database and replication engine to stand on their own. The free-form database and replication engine shouldn't require the existing Notes client software but should become fairly nondenominational server pieces available to everyone, eveo Microsoft applications.

Accepting this fate and learning to profit from it will pave the way for Lotus to build innovative workgroup applications instead of fighting the PC industry versioo of the Vietnam conflict.

Just a start

The recent introduction of BeyoodMail for Notes is just the beginning. BeyoodMail offered its E-mail package as a replacement for the Notes/CC:Mail E-mail component with direct access to the Notes database. That is just the first company to try to use the Notes server without buying a truckload of Notes clients.

Lotus would be wise to embrace this trend, although it will force a new business model for making a profit from selling a stand-alone Notes server. This will be difficult, and the temptation will be to battle Microsoft head-to-head, perhaps in a higher stakes game of chicken than the VIM/MAPI war could provide.

It would be better for Lotus to adopt a cooperative attitude of adding value to Windows for Workgroups and concentrate on providing innovative applications rather than tying up resources defending a position that is being surrounded — even if it is a nice high spot today.

Coursey is editor of "P.C. Letter," a biweekly newsletter based in San Mateo, Calif.



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IN BRIEF

New RAID system debuts

■ **Micropolis Corp. in Chatsworth, Calif., has introduced a redundant arrays of inexpensive disks (RAID) subsystem for PCs and servers that is said to provide the largest storage capacity available for machines running Novell, Inc.'s NetWare. Priced at $19,975 for a 4.2G-byte, three-module array, the Raidioo Model 4200 line offers up to 65G bytes of RAID Level 5 fault-tolerant storage. Additional 2.1G-byte drives are priced at $6,658.**

■ **Fulfilling a promise to spread its ToolTalk software over multivendor platforms, SunSoft, Inc. said the interapplication communications software will be available shortly on platforms from Hewlett-Packard Co., IBM, Digital Equipment Corp., Cray Research, Inc., Intergraph Corp. and Silicon Graphics, Inc.**

ToolTalk, which enables plug-and-play linking of applications, has been endorsed as an industry standard by more than 50 software vendors.

IS releases promoter

CONTINUED FROM PAGE 43

vices at Actmedia. "Of course, I suspect the transition I'm making is that now I'll be married to my software vendor."

Even so, the allure of open systems has been a powerful one for Actmedia, whose accelerated growth in the past five years has turned its $3 million customized Wang system into an albatross.

"I'll know we're all done with this conversion when I can push the Wang system out the fifth-story window," Klump said half jokingly. "Our applications systems are out of date, even though our code is only six years old."

Founded in 1971, Actmedia hit the $2 million revenue mark in 1982 and then blossomed to $200 million this year. It now employs more than 10,000 part-time coupon givers and product demonstrators in thousands of supermarkets.

> "IT'S NOT OFTEN you get funding and then give back $1 million. But when the technology is this new, you're learning as you go.... The most valuable lesson we've learned is to put your investment up front in the planning stages — the business model stage."
>
> JAMES KLUMP
> ACTMEDIA

The conversion project was launched one year ago with a "best guess" budget of $5.7 million. Six months later, Klump recalculated the cost and scaled it down to $4.5 million.

"It's not often you get funding and then give back $1 million of it," he said cheerfully. "But when the technology is this new, you're learning as you go. As we got smarter, we were able to reduce our costs."

His IS staff of 30 was also able to start with a "clean sheet of paper" in designing the new system. "We interviewed our users and developed a total model of the business," the IS executive said.

Actmedia found that at least 60% of the application functions on the old Wang system — many of them grafted onto the original database — were redundant and no longer necessary. Also, the nature of the business had dramatically changed in the past few years from mainly advertising to mostly promotional work.

Advertising has more to do with image in the consumer's mind (like connecting Bill Cosby with Jell-O Pudding) while promotional work has a more direct link between dollars spent and product sold. Coupons, for example, are promotions.

At this point, Actmedia's database modeling and detailed design are finished, and the first prototype application is ready to be installed on a still-to-be-chosen Unix server in January. After doing the Oracle development work on an IBM RISC System/6000, Klump said he is leaning toward an RS/6000 Model 970 as the database engine.

"The most valuable lesson we've learned is to put your investment up front in the planning stages — the business model stage," Klump said. "You can't just jump in and write code. You have to have a methodology."

Actmedia's methodology is based on consulting work done earlier this year with SQL Solutions, Inc., a subsidiary business of Sybase, Inc. The two parted amicably in August, however, when SQL Solutions decided to concentrate on Sybase clients rather than Oracle ones.

One major benefit Actmedia hopes to glean from the new client/server system is speedier, more accurate feedback for packaged-goods manufacturers about the promotions Actmedia manages for them.

"I think we're also going to see lower maintenance costs on our systems as we move down this road," he added.

The company's database is its lifeblood, brimming with information on the top 30,000 supermarkets in America. Of the roughly 140,000 grocery stores in the country, those 30,000 produce 75% of the dollar volume, according to industry sources.

Instant coupons

One of Actmedia's newest and most lucrative products this year was the "Instant Coupon" machine, a small device with a flashing red light that attaches to supermarket shelves and dispenses coupons on the spot. Installed in some 7,000 supermarkets nationwide, the coupon dispensers proved so popular that they generated $20 million for Actmedia this year.

"This turns out to be the most efficient way out there to deliver coupons," Klump said. Sunday newspaper inserts have a coupon redemption rate of only 2.3%, while the Instant Coupon machine rocketed that figure up to 20%. And the majority of that 20%, he added, came from people who had no intention of buying the product until they saw that red light twinkling away.

"We had to really hustle our IS function to build the systems we needed around this," Klump said. "On the new system, with a much more flexible platform, we would be able to deliver new applications for this significantly faster."

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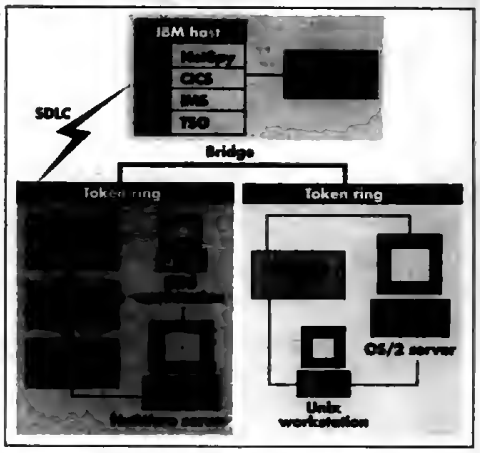
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Legent's LANSpy at work



Source: Legent Corp. CW Chart: Stephanie Faucher

LANSpy gets the thumbs-up, but...

BY GARY H. ANTHES
CW STAFF

VIENNA, Va. — Nearly a year after the introduction of LANSpy — Legent Corp.'s mainframe-based tool for monitoring and troubleshooting local-area networks — users said it offers advantages over products that are strictly LAN-based.

However, some users said Legent should also offer a client/server version of LANSpy that can operate independently of the older, host-based NetSpy performance monitor.

NetSpy, introduced in 1986, provides response-time and other performance data in IBM Systems Network Architecture (SNA) networks. LANSpy — a NetSpy component introduced last December and now installed at 29 U.S. sites — is a Token Ring LAN-resident software "probe" that scans all data packets and periodically sends performance statistics to NetSpy. LANSpy monitors LAN errors, LAN-to-host SNA response time and LAN file server and gateway volume statistics.

Columbia Gas System Service Corp. in Columbus, Ohio, has two IBM mainframes, one running MVS and one running VM, and a nationwide communications backbone tying together some 50 Token Ring LANs at 14 locations. NetSpy runs on the MVS machine, and LANSpy runs on the company's most critical LANs, said Gordon Kinney, manager of VM and data-network technical support.

Kinney said Columbia Gas purchased LANSpy to collect LAN use data for long-term capacity planning but now uses it extensively for troubleshooting. He said an analyst at a central site can watch the company's LANs and spot and fix problems, sometimes before users are aware of them.

Who's in charge?

Some users said bringing LAN information back to a central host raises thorny jurisdictional issues when central and departmental computing come under different groups or when computing and communications are separately administered. "Who gets the phone call when a LAN user is having a performance problem?" asked David Gruzeski, senior systems programmer at General American Life Insurance Co. in St. Louis, a beta-test site for LANSpy. "It really depends on how the company is organized."

Gruzeski said a separate telecommunications group at General American had originally looked for a "LAN solution" — IBM's LAN Network Manager — but agreed to Legent's LANSpy when the group found the IBM product did not provide the performance data required.

Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C., said the question of whether LAN

Continued on page 52

Consortia lend planning hand

ATM, frame relay, SMDS chiefs lay down telecom guidelines at Interop

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — Users trying to sort out the relative merits of today's emerging high-speed wide-area networking technologies gleaned a few pieces of planning advice from the presidents of the Frame Relay Forum, ATM Forum and SMDS Interest Group at the recent Interop '92 trade show.

A two-hour discussion with the heads of the consortia, which are charged with accelerating the development of telecommunications technologies that accommodate emerging high-speed applications, yielded at least some rules of thumb for users in transition who are worrying whether a certain technology will "win."

One user criterion is the time frame in which users intend to implement high-bandwidth applications, given that frame relay, Switched Multimegabit Data Service (SMDS) and Asynchronous Transfer Mode (ATM) are in different stages of availability.

One user, for example, said he was looking to link 15 nationwide sites with local-area networks — each with fewer than 20 sites — by the end of the year.

"Do I do point-to-point leased lines and wait to see how the technologies fall out?" he asked. "But then, what if there is no winner?"

The consortia acknowledged that given this user's time frame, he must choose frame relay or wait. However, they said there is no benefit in waiting because for multiple, small sites, leased lines are more expensive, and frame relay is widely available.

"You can still use frame-relay access to other technologies,"



Alan B. Taffel *weighs the merits of new network technology with Northpoint Consulting principal Laura Capaldini*

said Alan B. Taffel, president of the Frame Relay Forum.

"The biggest mistake you can make is to wait and keep paying leased line costs," added Fred Sammartino, president of the ATM Forum.

Another user questioned the reliability of frame relay for "lifeline applications." The panel explained that virtually every public frame-relay service automatically routes around faults because of fairly redundant switching mechanisms. In a leased-line scenario, on the other hand, a circuit failure means two sites quit communicating unless the user has purchased two for redundancy.

The need for speed

If users can wait for more service ubiquity with SMDS and ATM, speed requirements become a consideration. With the current generation of hardware and software for each of the technologies, frame relay is specified to run from fractional T1 speeds to 45M bit/sec. (T3); SMDS from 1.5M bit/sec. (T1) to 2.5G bit/sec.; and ATM from T3 to 622M bit/sec., Taffel said.

Some users said they were concerned about what the network providers are doing to deliver network management information to customers.

Steve Starliper, president of the SMDS Interest Group, said a primary 1993 agenda item for his consortium is customized network management via the Simple Network Management Protocol.

SMDS service currently does not offer this because the Management Information Base extensions are still under construction, Starliper explained. He noted that the only management currently available is a $15-per-month Borland International, Inc. Paradox database that details lost data packets.

Conversely, "most frame-relay providers are giving customers a window into their virtual networks," Taffel said.

The capability is largely allowed by StrataCom, Inc.'s FastPacket multiplexer platform, which is the base for many public frame-relay services. Its Foresight management software allows users to see congestion, peak use and average use by hour or minute.

Management is being defined in the first release of ATM, Sammartino said. While there are no public ATM services available now, he expects them in 1993, he said, citing ATM as being about a year away from prices competitive enough to justify mass deployment.

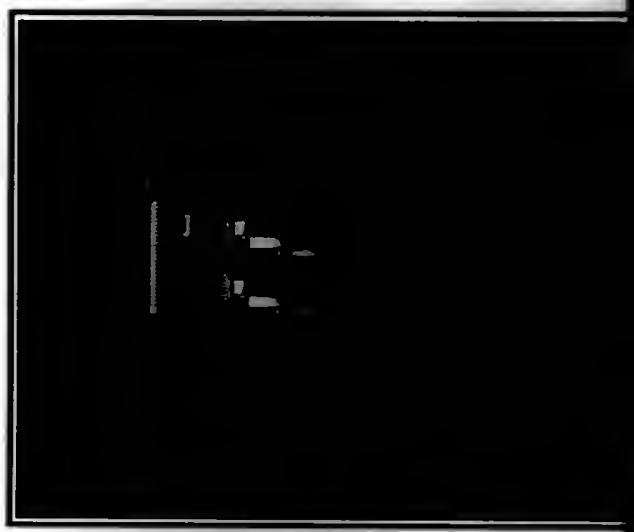
Points to ponder

Users learned a few specifics at an interop gathering about the relative merits of frame relay, ATM and SMDS:

- Public frame-relay services have been priced to compete with leased lines for transporting inter-LAN and SNA traffic among multiple sites.
- Users requiring nationwide LAN interconnection today can choose frame relay with an easy conscience: It is an inexpensive technology to upgrade to and can interface to cell-based transports such as ATM and SMDS in the future.
- ATM wide-area services will be available from some long-distance carriers in 1993.
- MCI Communications Corp.'s recent rollout of nationwide SMDS service should encourage local carriers to accelerate their SMDS efforts. SMDS may end up the least secure service because it is a public-switched service.
- All three technologies can carry multimedia applications, though frame relay and SMDS are not optimized for it. Frame relay and SMDS would use highly compressed video, which would slightly degrade quality.

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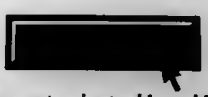
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COMPAQ

Graphical, LAN-based distribution system ships

BY LYNDA RADOSEVICH
CW STAFF

Start-up company Destiny Technology Corp. last week shipped DeliveryMan, a graphical, local-area network-based electronic software distribution system.

Aimed at users with 100-node or larger networks, DeliveryMan is a client/server application that allows network managers to install or update software on DOS, OS/2 or Microsoft Corp. Windows-based client stations from an OS/2-based dedicated server over NetBIOS and IPX/SPX LANs. Pricing ranges from $1,000 for 10 users to $4,500 for 100 users.

Citing reduced costs for disks, technicians' wages and end-user downtime, Stephen Bradley, program director at the Gartner Group, Inc. in Stamford, Conn., said, "Whatever the cost, the system pays for itself in less than a year."

Matthew Cain, program director at Meta Group, Inc. in Westport, Conn., estimated that businesses with 1,000 PCs spend an average of $50,000 annually just for software distribution. That includes one "bug fix," two application upgrades and one operating system change per year, assuming labor charges of $40 per hour and 20 minutes per upgrade.

"Today, an individual has to go from machine to machine doing the floppy disk shuffle," Cain said. "This method is labor-intensive and very costly." Electronic software distribution can help cut those costs, he said.

In addition to cost savings, electronic software distribution enables companies to simultaneously distribute client/server applications across geographically dispersed networks in a way that "wasn't physically possible before," Bradley said.

Using DeliveryMan, a network administrator can compress software program files, choose recipient clients, fill client information into graphical forms and simultaneously transmit the software from the DeliveryMan server.

A built-in scripting language allows the administrator to modify the necessary client files such as AUTOEXEC.BAT. Users at client stations can choose to accept the software update or wait until later. DeliveryMan stores transaction records in a database on the server and provides standard reports.

The updating process took "less than three minutes to deliver Windows 3.1 over Ethernet," said Scott H. Broder, president of Destiny Technology.

The software also addresses licensing — a sensitive issue with many network administrators — with a license tracking feature.

Distribution systems already exist in the mainframe environment, including IBM's Distribution Manager, AM:PM from Tangram Systems Corp. in Cary, N.C., and Synchrony from Farmington, Conn.-based Telepartner International.

DeliveryMan "is not as sophisticated or fully functional as mainframe-based solutions, but it is very simple and it seems to work," Bradley said. "The environment is LAN-based, so administrators can distribute applications without relying on the host data center."

In October, Novell, Inc. introduced Network Navigator DOS-LAN Distributor 2.0, an electronic software distribution system that runs on NetWare-based LANs. The product was developed by Annatek Systems, Inc., which Novell purchased last summer [CW, Oct. 5].

Analysts predicted that client/server-based electronic software distribution will become a function of operating systems such as Microsoft's Windows New Technology in a couple of years.

LANSpy gets thumbs-up

CONTINUED FROM PAGE 49

tools should be LAN- or host-based depends on how they are to be used. "You don't want to manage LANs from the glass house," he said. "But this isn't management; it's performance monitoring. You'll always have centralized monitoring."

Indeed, users said host-based LAN monitoring and capacity planning allow use of a rich set of mainframe analytical tools. For example, one LANSpy user said LANSpy data is processed and presented by Legent's mainframe-based set of integrated management tools for use analysis and work load and capacity forecasting.

Nevertheless, Dzubeck said, Legent will eventually have to deliver a mainframe-free version of its network products. "The equivalent of NetSpy must be produced for the LAN. Otherwise, this is just a master/slave relationship, and that is not the way the industry is going. It's going distributed."

Houston-based Texaco, Inc. has installed LANSpy at two of 19 major U.S. sites so far, and Sam Kapadia, telecommunications consultant, said he would like to use it for both centralized monitoring and localized troubleshooting. "At our [Houston] network control center we can look at LANs throughout the corporation, see end-to-end response time and do capacity planning. But at the same time, LAN administrators at local sites want to see the utilization of the LAN without having to log on to the mainframe."

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IN BRIEF

IBM to license Wollongong software

■ **IBM** will license networking software from the **Wollongong Group, Inc.** in Palo Alto, Calif., to use in future networking products that it expects to announce in the fourth quarter of this year. The products include IBM network/transport software and virtual terminal, terminal emulation, file transfer and high-level scripting language services for use on DOS, Microsoft Corp.'s Windows, the Apple Computer, Inc. Macintosh, OS/2 and Unix workstation platforms in an IBM/Digital Equipment Corp. host environment.

Separately, the Wollongong Group announced that **Harris Space Systems Corp.** has selected its new Management Station as the Simple Network Management Protocol manager for the **Kennedy Space Center's** Core Electronics Systems Project.

■ **Sun Data, Inc.** in Norcross, Ga., announced a new division to help customers integrate IBM Application System/400 minicomputers with local- and wide-area networks. The division will help customers install Novell, Inc. NetWare or IBM Token Ring LANs, integrate them with new, upgraded or existing AS/400s, load software and train systems managers.

■ **Syntrex Technologies, Inc.** in Eatontown, N.J., a wholly owned subsidiary of **Phoenix Technologies Ltd.**, launched a network management and support center that gives Syntrex engineers the capability to remotely manage customers' networks on a 24-hour-a-day basis.

■ **Frontier Technologies Corp.** in Mequon, Wis., will offer Super-NNTP for Windows in November, the company announced. The product will allow Internet users to access network news from a Microsoft Windows desktop.

■ Following its acquisition of Provo, Utah-based **ServicePoint Development Corp., Network Computing, Inc.** in San Jose, Calif., is offering the ServicePoint automated help desk as a component of its LANAlert system management suite. ServicePoint pricing starts at $995 for a single user and $12,995 for a site license.

■ **Northern Telecom, Inc.** and **Network Systems Corp.** in Minneapolis have agreed to work together to develop cell-switching technology and products for LANs and WANs.

Also, **Vitalink Communications Corp.**, a wholly owned subsidiary of Network Systems, reduced prices on its 6600 line of single-board Fiber Distributed Data Interface-to-Ethernet bridge routers. The 6612 and 6617 models were reduced from $24,000 to $19,500 and $28,000 to $22,000, respectively.

■ **Teleglobe Canada, Inc.** has formed a consortium with 20 European and U.S. telecommunications carriers to lay a $385 million high-capacity fiber-optic cable linking North America with Western and Eastern Europe. Teleglobe claims the cable, which is slated for service by December 1994, will have 300% more capacity than current fiber-optic technology.

■ **Fibermux Corp.** has rolled out Windows and Unix versions of LightWatch/Open, the Chatsworth Calif.-based company's network management system integrated with **Hewlett-Packard Co.'s** OpenView network management environment.

■ **Cisco Systems, Inc.** in Menlo Park, Calif., signed an agreement under which Italy's **Ing C. Olivetti & Co.** will resell Cisco's internetworking products — including multivendor routers and communications servers — as part of Olivetti's European-based network integration business.

■ **Chipcom Corp.** in Southboro, Mass., will port its ONdemand Network Control System software package to **DEC's** network management platforms in the first quarter of 1993.

■ **Tennessee Temple University** in Chattanooga, Tenn., has awarded **Memorex Telex Corp.** a contract worth approximately $500,000 to provide 145 I486SX PCs and Extended Industry Standard Architecture-based servers, as well as Novell and Synoptics Communications, Inc. products. The contract will include network design, installation, integration and training, the Irving, Texas, vendor said.

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SoftSwitch adds more enterprise mail gateways

BY JOANIE M. WEXLER
CW STAFF

SAN FRANCISCO — Electronic-mail connectivity vendor SoftSwitch, Inc. was a high-profile player at the recent Electronic Mail Association conference in moving users closer to their goal of building enterprise messaging networks from a patchwork of disparate systems.

The Wayne, Pa., company, which earlier this year rolled out a downsized version of its mainframe-based mail gateway system, made several announcements that address some of the concerns users expressed at the show about platform-to-platform connectivity [CW, Nov. 2]. These included the following:

- Gateways that allow Lotus Development Corp.'s CC:Mail and Microsoft Corp.'s Microsoft Mail users on local-area networks to communicate with X.400, IBM Systems Network Architecture Distributed Services and Transmission Control Protocol/Internet Protocol mail networks supported by SoftSwitch's mainframe-based translation software, SoftSwitch Central. The CC:Mail version quietly became available last month; the Microsoft Mail version began beta testing last month, and no ship date has been announced.
- Support of Apple Computer, Inc.'s Open Collaborative Environment (OCE), an extension of the Macintosh System 7.0 operating system that provides services such as messaging, directories and authentication. OCE support on SoftSwitch's distributed Enterprise Messaging Exchange (EMX) means the EMX can serve as a backbone for transport and directory services for OCE-compliant Macintosh applications.
- Implementation services, available immediately, to help customers simplify messaging system integration.
- A message switch, based on the EMX architecture, to allow public carriers to switch messages among different local area network-based systems.

Also at EMA, Apple announced three Open Systems Interconnect (OSI)-oriented products: MacX.400, which allows users to send mail from a Macintosh to other types of desktop computers and to recipients who use proprietary mail systems; MacODA, a software translator that allows the interchange of documents among different applications and platforms; and OSI Connection for Macintosh, which allows Mac applications to run across OSI networks.

Meanwhile, Verimation, Inc. in Rockleigh, N.J., released Version 4.0 of its Memo mail-oriented product, which adds PCs and other LAN-based desktop platforms to its mainframe-based office communications system. The Memo product blends mail, business applications, work-flow and document management functions into one package.

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Interop notebook

Announcements made at the recent Interop '92 conference included the following:

- **Bus-Tech, Inc.** in Burlington, Mass., will join with **Novell, Inc.** and **IBM** to market an implementation of NetWare for Systems Application Architecture (SAA) on the IBM 3172 communications controller. The built-in channel-based connection of the Bus-Tech 3172-BT1 eliminates the need to use an IBM 3174 cluster controller or equivalent as an extra piece of hardware between the NetWare for SAA server and the mainframe, the vendors said.

  In addition, the 3172 is five to seven times faster than the 3174, which was not designed to support local-area network-to-host connections, an IBM spokesman said.

  The product will also support direct mainframe access for other NetWare Loadable Modules, providing users with applications such as SQL database access. With pricing beginning at $21,950 for hardware and software, the 3172-BT1 is scheduled for December availability.

- **NetManage, Inc.** in Cupertino, Calif., announced what it claims is the first Transmission Control Protocol/Internet Protocol (TCP/IP) application for Microsoft Corp. Windows for Workgroups Version 3.1. The product extends NetManage's Chameleon product, which provides users with access to TCP/IP from Microsoft's Windows and Windows New Technology. Priced at $400, Workgroup Chameleon is shipping now.

- **NCR Corp.** announced support for the **Open Software Foundation**'s Distributed Computing Environment (DCE), which will be made available across the NCR System 3000 Unix V Release 4 family.

  The DCE implementation will include application support and DCE Core Services, including DCE Cell Directory and Security Services, NCR said. The DCE Global Directory Service will be integrated with NCR's Open Directory500 distributed X.500 directory service, the vendor said.

  NCR's Top End on-line transaction processing software will be able to make use of DCE remote procedure calls, and NCR's Star Sentry network and systems management software will support DCE as part of its evolution to OSF's Distributed Management Environment, NCR said.

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NEW PRODUCTS

Network management

Tekelec has started shipping Version 1.0 of ChameLAN 100 Token Ring analyzer.

According to the company, the product can support simultaneous analysis of multiple Token Ring local-area networks and will include diagnostic functions similar to those of ChameLAN 100 Fiber Distributed Data Interface and Ethernet products.

New protocol decode support is provided for interfaces, including Novell, Inc.'s NetWare, Sun Microsystems, Inc.'s Sun NFS and Apple Computer, Inc.'s AppleTalk.

Through the system's DeskTop interface, users can choose multiple LAN segments to analyze. Data can be captured, viewed or filtered in real time on each indivdiual test interface.

The ChameLAN 100 costs $6,500.

Tekelec
26580 W. Agoura Road
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(818) 880-5656

Network Security Systems, Inc. has introduced LanSafe II network power management software.

The product was designed to provide an integrated approach for centrally managing electrical power to all local and remote network components. Interactive management and control power management devices are provided for components such as data communications servers, critical workstations, bridges and file servers.

By using the software's management console screen, users can monitor real-time loads and troubleshoot power management problems and battery and voltage status.

LanSafe II software for Novell, Inc. networks costs $135.

Network Security Systems
9401 Waples St.
San Diego, Calif. 92121
(619) 587-7950

Frye Computer Systems, Inc. has introduced the NetWare Console Commander.

According to the company, the product allows users to automatically schedule any Novell, Inc. NetWare 3.1 console command to automatically take place at the time set.

NetWare Console Commander was designed to clear connections that interfere with backups, load and unload Netware Loadable Modules, send messages, set NetWare's setable parameters, run NetWare Command Files and run any server-based program. A screen-saver with password protection is also included.

The product costs $395.

Frye Computer Systems
19 Temple Place
Boston, Mass. 02111
(617) 451-5400

Metrix Network Systems has announced NetMetrix 3.0, an Internetwork Monitor designed for Ethernet, Token Ring and Fiber Distributed Data Interface networks.

It offers compatibility with RMON, the Simple Network Management Protocol standard for monitoring remote local-area networks. The product collects data from RMON agents running on each segment in the network and has software that runs on a standard Unix platform. The data is integrated and correlated for complete end-to-end visibility of a multisegment network, the company reported.

Version 3.0 works in conjunction with the NetMetrix Load Monitor, which offers analysis of the traffic on the LAN. Traffic can be measured and graphed by the Load Monitor by source, time interval, destination, packet size or protocol.

License prices start at $1,995 per tool.

Metrix Network Systems
1 Tara Blvd.
Nashua, N.H. 03062
(603) 888-7000

Gateways, bridges, routers

Hayes Microcomputer Products, Inc. has announced the Hayes Millennium 8000 Network System.

According to the company, the product provides a high-density communications platform that offers an upgradable solution for wide-area connectivity to both local-area network and host environments. Up to 16 Line Cards and two System Controller Cards are provided. Each Line Card has the capacity to provide between one and eight communications devices, including Integrated Services Digital Network terminal adapters and high-speed modems.

Support is provided for control management and access to a LAN by each controller card. An overall capacity of up to 128 communication devices per chassis is provided.

Prices range from $1,000 to $1,300 per port.

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IN BRIEF

User groups swap lists

■ The IBM user group **Guide International** and the open systems standards organization **X/Open Co.** have exchanged membership lists so members of one group are now automatically members of the other.

■ **Compuware Corp.** has filed a registration statement for an initial public offering. Additionally, the company has signed a letter of intent to acquire **Landmark Systems Corp.**'s Eyewitness CICS fault-diagnosis tool.

■ More vendors have jumped on **IBM**'s Distributed Relational Database Architecture (DRDA) bandwagon. **Object Technology International, Inc.** and **XDB Systems** have announced products that provide access to IBM's relational database managers. **The Ask Group's Ingres Products Division** and **Progress Software Corp.** said they will deliver DRDA gear.

■ **Intel Corp.** named Wendy Vittori general manager of the Intel Supercomputer Systems Division European Operation. Vittori, who has been director of marketing and strategic planning at the Supercomputer Systems Division in Beaverton, Ore., will also direct the operation of Intel's Supercomputer Development Centre in Munich, Germany.

CA/Citicorp deal spells change

Agreement may force big iron software vendors to abandon tiered pricing

BY THOMAS HOFFMAN
CW STAFF

Since Citicorp landed a five-year, flat-fee software licensing agreement with Computer Associates International, Inc. last month, users, analysts and software vendors have expressed mixed views on whether the agreement will force mainframe software vendors to abandon the standard tiered-pricing model in favor of alternate pricing options.

"Other mainframe software vendors will have to address this in their own way," noted Ed Acly, director of software research at Technology Investment Strategies Corp., a Framingham, Mass., market research firm.

Those vendors will have to adopt alternate pricing schemes, agreed Jerome Doniger, general manager of the technology support division at the U.S. Postal Service (USPS). He cited the changing technological needs of customers who are moving away from mainframe-centric computing to distributed computing environments.

The USPS became the first federal agency to agree to a flat-fee enterprise licensing agreement with CA — only a week after the Citicorp deal was announced [CW, Oct. 19].

Doniger said the USPS is working to restructure its licensing agreements with its nine primary software vendors. So far, it has inked new enterprise licensing agreements with CA and Legent Corp. in Vienna, Va. Doniger said the federal agency is still negotiating a deal with IBM.

A spokesman at IBM said the Armonk, N.Y., computer firm has no plans to shift away from tiered pricing for mainframe software. While the spokesman said the firm will continue to work with its customers on improving the price/value ratio, he said no major licensing changes are in store.

John Burton, president and chief executive officer at rival Legent, said his company has offered its customers flat-fee enterprise licensing for several months, though the firm did not announce it publicly.

"If you have outstanding problems with your pricing, you have to make a lot of noise. We don't have outstanding problems with our customers," Burton said.

Early clients of Legent's enterprise licensing program, Burton said, include Pacific Bell, Ameritech Corp. and The Boeing Co.

The enterprise licensing program Legent offers includes individual and multiple site licenses, with options for predetermined cost escalations for software, Burton said. Customers under this program are not forced to pay upgrade charges based on hardware changes, he said.

Pay per MIPS

Unlike CA's enterprise licensing program, which charges customers based on the number of millions of instructions per second (MIPS) of computing power required to run the software, Legent enterprise licensees pay a flat-fee based on the "value" of the software, Burton said.

Most users said they would have to evaluate the range of pricing options before deciding on the licensing agreement that best suits their company's needs. For example, Tom Loane, vice president of computers and communications at Alamo Rent-A-Car, Inc. in Fort Lauderdale, Fla., said his company would not license software based on MIPS use because Alamo has been increasing its MIPS use 50% annually.

Dick Kane, department head of technical infrastructure and support at ITT Hartford, said his company would favor enterprise-wide licensing because it would allow the firm to run software across its multivendor environment without paying additional costs. But Kane said he would like to evaluate alternate pricing plans before deciding.

Manufacturers upgrade logistics applications

BY JOHANNA AMBROSIO
CW STAFF

Until this year, the Church of Jesus Christ of Latter-day Saints was using a warehouse-management system that was "older than dirt," said Ben Christiansen, warehouse operations manager. Now that a spanking new computer setup has been brought in, four positions have been eliminated and merchandise is easier to find.

The church is not alone. As small and medium-size manufacturers scramble to modernize their computers, they are finding a host of benefits to adopting a new approach to managing the warehouse and other aspects of the business.

"It used to be that manufacturers looked at each function — transportation, purchasing, manufacturing, logistics — and managed and optimized them separately," said Martin Piszczalski, director of the manufacturing automation service at The Yankee Group in Ann Arbor, Mich. "Now they're looking at the whole picture to see how to improve customer service."



Warehouse management is one part of logistics, which is broadly defined as the movement of raw goods and merchandise from suppliers to the manufacturer and then to the manufacturer's customers.

"The old method and old software in place was based on guessing what was in there," said Curt Monash, a software analyst in New York. "And the old software was not tied to real business schedules. The new method is based on knowing exactly what is there and where it is." Another reason to modernize the software, Monash said, is the movement to distributed computing, which forces the issue of new hardware, software and database management systems.

Customer service was one driving motivation behind the modernization move at the church's 186,000-sq-ft warehouse in Salt Lake City. "We are like our civilian counterparts," Christiansen said. "My personal goal is to have flawless customer service."

The warehouse stores and ships 465,000 cases of merchandise per quarter, with an annual dollar volume of $30 million. Bibles and other printed material account for most of the goods shipped, but there is also the occasional refrigerator, cement mixer or forklift that comes through.

Continued on page 62

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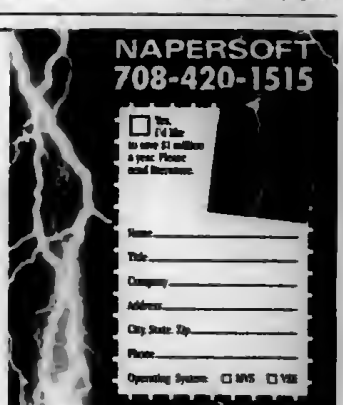
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IBM accuses resellers of selling fake parts

BY LYNDA RADOSEVICH
CW STAFF

Seven third-party resellers distributed modified IBM code and circuit cards represented as genuine IBM parts, IBM charged in a recent lawsuit.

The suit, filed in U.S. District Court in Charlotte, N.C., last month, accuses the firms and five individuals of selling counterfeit circuit cards for IBM 3174 Establishment Controllers that connect workstations with mainframes. IBM is seeking temporary and permanent injunctive relief and undetermined monetary damages.

IBM recently mailed letters to the installed base of 3174 customers notifying them of the possibility of counterfeit parts and explaining that the cards do not comply with IBM standards and are not covered by IBM maintenance agreements. The company said it does not know how many counterfeit cards have been sold.

Named as defendants in the suit were American Data Company, Inc. in Charlotte, N.C.; Brookwood Computer Industries, Inc. in Alpharetta, Ga.; ClassicBlue Computer Services, Inc. in Randolph, N.J.; Com-Gear Unlimited, Inc. in Canton, Ga.; Computer System Services, Inc. in Canton, Ga.; Five Star Computer Services, Inc. in Carrollton, Texas; Savon Systems, Inc. in East Setauket, N.Y.; and five individuals.

The card in question — the 3270 Port Expansion Feature — allows the 3174 to connect to 64 ports rather than the standard 32. It sells for $4,865. The port expansion software code sells for $1,265. The company has shipped 200,000 3174s since the machine's introduction in 1986.

"We believe we are only seeing the tip of the iceberg," an IBM spokesman said.

No failed systems have been traced to the bogus IBM cards yet, but IBM claims the cards do not comply with IBM standards and can cause systems to fail.

Customer warranties from IBM would not cover the parts, even if users did not know the parts were counterfeit.

"That's just good business practice," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C.

IBM also said it would bill customers for maintenance it may have unknowingly provided on counterfeit parts. The company said it will continue to support customers and the genuine IBM parts of the system (see story below).

Surprise, surprise!

Several of the defendants seemed surprised by the charges.

John Lavin, president of ClassicBlue Computer, said, "There was no way for us to know" whether ClassicBlue was distributing modified IBM parts. "IBM never trained us to spot counterfeit software." According to IBM, the counterfeit parts come complete with fake IBM labels.

Others defendants in the suit who were contacted said they expect to reach an agreement with IBM.

The suit is the most recent in a string of actions that IBM has filed in the past 18 months. For example, in October 1991, IBM charged Comdisco, Inc., a computer leasing company in Rosemont, Ill., with passing off counterfeit IBM memory cards. The suit is ongoing.

IBM would not say how it is tracking the counterfeit parts, but it is being "much more aggressive" in managing its maintenance contracts and is increasing the number of physical, on-site inspections of its equipment, Dzubeck said.

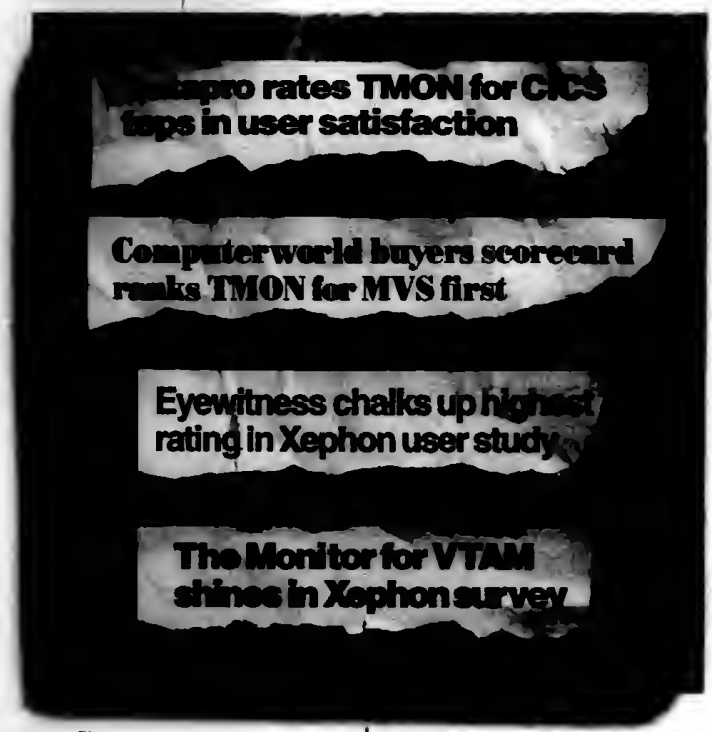
Duped?

Say you discover your IBM 3174 has parts you thought were genuine IBM, but that were, in fact, modified. What do you do?

IBM said customers should contact suppliers and get a guarantee that only genuine IBM parts were used. If IBM finds a counterfeit part, it will not cover it under an IBM warranty. "If the customer chooses to maintain an IBM agreement, we recommend they buy a genuine IBM part," said George Mills, the establishment subsystems planning manager at IBM.

"I would go back to the person who sold it to me and ask for my money back," said Frank Dzubeck, president of Communications Network Architects in Washington, D.C.

IBM will check customers' systems for counterfeit parts for a fee. Users should contact an IBM marketing representative for pricing.



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'Software agents' make headway on office tasks

BY JEAN S. BOZMAN
CW STAFF

SANTA CLARA, Calif. — Small firms may find themselves shorthanded when it comes to handling routine office tasks and processing purchase orders. A small Silicon Valley firm claims to have an answer to that quandary in the form of "software agents" that can answer the phone, retrieve vital information from the corporate database and send orders out the door.

Edify Corp. has been shipping its Information Agent software on a specially equipped IBM PC running OS/2 since February. Last month, as it was seeking another round of funding, the 50-person firm enhanced its bundled office system. Edify now has "express agents," or preprogrammed, object-oriented programs that know where to find data and how to pass it along to telephone callers or to customers with fax machines. They can also be interfaced with character-based electronic data interchange applications, the 2-year-old firm said.

The express agents are designed to speed development of Edify applications by business managers, often without the advice and counsel of information systems programmers. "We sell to the end users, not to IS," explained Charles Jolissaint, the firm's chief technical officer. "Our interface is set up so that a power PC user who can set up macros can set up the [Edify] application." Users manipulate icons written in the object-oriented C++ language, which can be reused in other applications.

Early users say the $70,000 system — complete with hardware and special fax and phone cards — can pay for itself in a few months; individual agents are priced at $7,500 each. "It's like you hired a person to manage your routine business tasks 24 hours a day," said Marty Martin, manager of customer service at Xilinx, Inc., a $135 million semiconductor maker in San Jose, Calif. Technical support personnel head home at 5 p.m., but European customers can check on their orders all night long, accessing an Ingres Corp. database on a Sun Microsystems, Inc. server.

Industry analysts said Edify works on a very high level of abstraction. It does not carry out SQL queries against relational databases, for example, but it can pass along query results for inclusion in user reports. "They rely on the fact that connectivity to all the relevant databases must already be in place," said Christina Filistowicz, a senior analyst at Dataquest, Inc. in San Jose, Calif. The underlying database and its applications then treat the actions of the Edify agents exactly as if they were human users logged on to the system.

The product's fax and telephone support allows Edify users to add Touch-Tone telephone queries to databases, using synthetic speech to read the data aloud to callers. So far, however, Edify is limited in that it works with character-based screens only; a Microsoft Corp. Windows version is about six months away from shipment, Jolissaint said.

Spending cutbacks hit home

BY JOHANNA AMBROSIO
CW STAFF

A study recently released by Nolan, Norton & Co. confirms what every data center manager must surely know by now: Data center staffing and spending levels are down across the board.

But other trends also emerge: Small data centers have been harder hit than their larger counterparts, the mix of data center employees has remained relatively stable during the last 12 months, and shops are using their disk storage resources more efficiently than ever.

The information for the study, based on surveys conducted at 200 Nolan, Norton client sites, includes data from 1990 and 1991. The information was compiled in April and was publicly released by the Boston-based consulting firm late last month.

For statistical purposes, a large data center is defined as having an active work load of at least 100 million instructions per second (MIPS); a small center has below 100 MIPS. All of the numbers that reflect a decrease or increase are compared with the respective numbers taken for the year-earlier period.

No spending spree

Spending on technology — which includes mainframes and minicomputers, tape and disk storage and systems software — dropped 7% at small data centers and 4% to 5% at large ones. "Spending on processors, disk and tape decreased, while spending on systems software increased," said Tom Hickey, senior manager at Nolan, Norton.

For example, he said, processor spending declined 12% at small data centers vs. 7% at larger ones, while systems software spending actually increased by 9% at small data centers and by 2% at larger shops. Systems software spending would be up even more, Hickey said, were it not held down by consolidation moves and programs in user shops to get rid of seldom-used packages to cut down on maintenance costs.

Support grows

Service and support roles are the ones showing even slight growth on data center staffs



Source: Nolan, Norton & Co.

CW Chart: Michael Siggins

On the personnel side, staff levels decreased by 10% in small data centers vs. 6% for their larger counterparts. One explanation, Hickey said, is that "where large shops automated early on, smaller data centers are kind of catching up." Likewise, personnel spending decreased by 10% at smaller data centers and by 1% to 5% at larger shops.

Other trends picked up include the following:

- Disk storage, which averaged 7.5G bytes for every MIPS of computer work load, has decreased to 7.1G bytes. "That says that people are running a lot tighter than in the past," Hickey said.
- Response times continue to improve. "Subsecond response times are no longer the exception," Hickey said.
- Levels of manually intensive activities, especially in tape mounting and printing outside of the data center, continue to decrease. Manual tape mounting dropped by 35%, Hickey said, mostly because of the use of automated tape loaders and tape silos. On the print side, the number of pages printed out of the data center decreased by 12%.

Factors here included use of print viewing software; two-up and four-up printing; downloading printing jobs to local-area networks and PCs; and redesigning some applications to use local print more efficiently.

The "general belt-tightening" will continue next year, Hickey predicted, as will more use of plug-compatible hardware because of better prices.

Sequent expands Symmetry line's clustering capability

BY MARK HALPER
CW STAFF

BEAVERTON, Ore. — Sequent Computer Systems, Inc. last week added a host of hardware and software features to its Symmetry line of Unix multiuser systems in an effort to enhance the line as a database server in standalone client/server and mainframe coexistence schemes.

The highlight of the announcement was the expansion of the line's clustering capabilities so that systems in a cluster can share the same database. Previously, they could only share the same storage device.

The new clustering design supports up to four systems, compared with two under Sequent's existing scheme.

Sequent said the two-cluster systems, which will ship in the first quarter of 1993, and three- and four-cluster versions, which will ship in July or August of next year, will run Oracle Corp.'s forthcoming parallel relational database software, Oracle 7.0.

Two-system versions will be based on multiprocessing versions of Intel Corp.'s 50-MHz I486 chip, and the three- and four-box clusters will be based on Intel's forthcoming Pentium chip — the 586. All will run on Sequent's Open Software Foundation (OSF)-type Dynix/ptx Unix operating system, to which the company last week added security features and OSF application programming compliance.

In a key addition to Sequent's clustering capabilities, the company said it will provide its own, rather than Oracle's, manager, which includes fault tolerance.

The firm also added an integrity manager that will switch a user to a different system in the event of a system failure and return the user to an earlier data state.

The Sequent cluster schemes shuttle data between boxes over Ethernet or Fiber Distributed Data Interface media, according to product marketing manager Tejas Vakil.

One Sequent user said clustering should make Unix a more viable platform in commercial environments. Michael Higgins, technology support manager at San Francisco-based clothing manufacturer Byer California, said, "We've reached a fork in the road where you need either two-phase commmit or clusters." He said that clustering is less complicated and safer than using a two-phase commit process.

A two-system cluster consisting of a 6-processor Symmetry 2000/750 and a 4-processor model 250 costs $704,300.

Upgrading logistics apps

CONTINUED FROM PAGE 59

Until June, the warehouse had been managed with a Distribution Management system from GDS & Associates in Portage, Mich. The software, Christiansen said, "was good 20 years ago but was old 15 years ago." The church decided to replace it with a multimodule package from Daly & Wolcott in West Warwick, R.I., "to give us an integrated view of things," he added.

The new software, which runs on an IBM Application System/400, "shows us exactly where everything is and how much is there," Christiansen said.

At Harley-Davidson, Inc. in Milwaukee, "the goal is to be more efficient," said Richard Kolbe, director of MIS. To reach that goal, the firm is installing customer order processing software from American Software, Inc. in Atlanta. It should be in production by the beginning of next year, Kolbe said.

"Now we generate three different reports each day for the pick list, the packing list and address labels. The new system will save three to four hours a day," as well as cut down on errors, Kolbe said.

In contrast, cost-cutting was the basic reason behind the modernization effort at Fieldcrest Cannon's institutional towel division. In August, the company began installing warehouse-management software from Imrex Computer Systems in Great Neck, N.Y. "We're moving inventory from a larger warehouse down to a smaller one in Charlotte, N.C.," said Ken McHenry, manager of information systems at Fieldcrest Cannon in Kannapolis, N.C. "Once the technology has been proven there, we'll expand it to others."

NEW PRODUCTS

System software

Raxco, Inc. has released Version 2.2 of its Security Baseline System software.

The software was designed to locate and report the differences between current system characteristics and site-defined security standards on Digital Equipment Corp. VAX/VMS systems.

The product features the ability to collect baseline reports from remote nodes on a network and then use the reports to generate s consolidated summary report. This report determines which nodes comply with the security policy of an organization.

Prices range from $174 to $11,514.

Raxco
Suite 200
2440 Research Blvd.
Rockville, Md. 20850
(301) 258-2620

Database management

IBM has introduced the IBM SQL Master/VM 1.1, an upgraded productivity tool.

According to the company, the product was designed to help users automate many routines and repetitive tasks. Working with the IBM SQL/Data Systems (SQL/DS) program, IBM SQL Master/VM 1.1 can automate a number of the manual functions needed to support SQL/DS databases within VM/XA, VM/ESA and VM/SP environments.

Improved support of VM and a variety of archiving methodologies are offered in addition to enhanced authorization structures.

Basic license charges range from $75 to $1,555 per month.

IBM
800 N. Frederick Ave.
Gaithersburg, Md. 20879
(301) 240-7277

BMC Software, Inc. has announced Data Migrator, a database management tool.

According to the company, Data Migrator was designed to move IMS data to DB2 tables quickly and easily while maintaining on-line data availability and maximum performance. The entire process of unloading data from IMS is automated by Data Migrator. The product maps the data into DB2, makes image copies and populates tables and indexes.

CPU-level prices start at $10,500.

BMC Software
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

Software application packages

Generic Software, Inc. has announced Remdoc, s menu-driven software package designed for the IBM System/36 and Application System/400.

According to the company, users can create up-to-date documentation for RPG and Cobol-based libraries. Remdoc generates copy that can be printed or viewed on 80- to 132-column workstations. The product can simultaneously generate and analyze documentation for up to 30 different user libraries. Features include cross-references, library and member comparisons, screen and print charts and procedure flow charts. A data dictionary facility is also included.

Remdoc costs $1,250.

Generic Software
986 Madison Ave.
Madison, Miss. 39130
(601) 853-1189

SAS Institute, Inc. has started providing transparent access to data stored in IBM Application System/400 databases with the SAS System, the company's information delivery system.

Eliminating the need to create intermediate files, the interface is currently available to users of SAS System running OS/2. A full-screen, menu-driven interface is included for describing AS/400 tables and data to the SAS System. Users can insert, read and upgrade records into AS/400 tables or files, the company reported. Features include native data management capabilities and the ability to store private data libraries on the AS/400.

The first-year license fee for the SAS/Access software begins at $695.

SAS Institute
SAS Campus Drive
Cary, N.C. 27513
(919) 677-8000

Utilities

Megaware, Inc. has introduced MegaPrint, s VAX/VMS system utility.

According to the company, MegaPrint allows Digital Equipment Corp. VAX systems to communicate directly with Hewlett-Packard Co.'s PCL printer language. Users can directly tie HP or HP-compatible printers into their VAX engines with MegaPrint.

The utility is installed as a resident part of the VMS operating system, and it converts the VMS LNO3 format files into PCL commands and sends them to any queue within its command. Text formatting can be produced, and the utility seamlessly integrates with the VMS operating system, which eliminates the need for additional printing steps.

Individual printer licenses start at $349. Site and corporate licenses are also available.

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600 W. Cummings Park
Woburn, Mass. 01801

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More than a 'browse' at Phelps Dodge

Application development technology to boost productivity and prepare for client/server

BY GARY H. ANTHES
CW STAFF

PHOENIX — Whoever said mainframes are not user-friendly should take a look at the applications that Phelps Dodge Corp. is developing.

Armed with a mouse, a user can sit at his desk and browse through data in a metals inventory system running on an IBM Enterprise System 9000/440. The user can click on a column heading and sort the contents of that column; enter G* at the top of a list and retrieve all customers whose last names begin with G; select a figure showing inventory in pounds and convert it to metric tons; and drill down in seconds from a year-to-date tonnage figure to a single bill of lading.

"In our system, a browse is not just a browse," boasted Albert Barbieri, database administrator at Phelps Dodge headquarters.

ON SITE

Phelps Dodge Corp.
Phoenix

- **Challenge:** To leverage small IS staff to meet user demands for new systems while positioning the company for client/server computing.
- **Technology:** 4GL, application generator and database management software from Software AG.
- **Results:** In one major application, reduced development time from 15 months to three months; mainframe applications can be ported to client/server with minimal effort.

Reusable templates

At the mining and industrial products company, a "browse" is one of 13 "application architecture models" developed to help automate the creation of new applications software. Written entirely in the Natural fourth-generation language (4GL) from Reston, Va.-based Software AG of North America, Inc., the models are predefined, reusable templates for the basic functions — such as browse, help, update, menu and user profile — that are found in most applications.

The models required 15 person-months to develop — a one-time effort that was done as part of the development of the metals inventory system. Using those models and Natural 2.2, Phelps Dodge was able to develop an insurance application with more than 1,000 programs in 90 days. That would have taken at least 15 months using conventional programming approaches, according to Dudley A. McRae, director of corporate information services.

In addition to speeding development, the models ensure that all applications have the same look and feel, McRae said.

Now Phelps Dodge is poised to take another step forward. It is integrating the models into Software AG's Natural Construct code generator, which comes with some 65 software models of its own. Construct will speed the generation of the custom code that has to be added to the models for each application.

Small world

The company's quest to find faster ways of putting up new applications and overhauling old ones was mandated by a tiny information systems staff — fewer than two dozen application programmers at the corporate level in the $2.5 billion company — that is the legacy of severe cost-cutting in the face of depressed copper prices in the mid-1980s.

"It is self-preservation," said McRae. "Users aren't going to wait two years to do things."

Several acquisitions in Phelps Dodge's mining operations during the 1980s brought with them a number of incompatible computer systems, including, for example, three payroll systems written in four languages. "The company took a look at IS and wasn't too happy with what it saw," McRae said. "I saw that we had no long-term IS strategy. With the staffing we had, we were just keeping the wolves at bay, putting our fingers in holes in the dike because of all the dissimilar systems we had assumed."

With the purchase of the Chino Mines Co. in 1987 from Kennecott Corp., Phelps Dodge picked up Software AG's Natural and the Adabas database management software.

After considering other database alternatives, McRae decided to make those the foundation for the company's rapid application development as well as its approach to client/server computing.

The company cannot go very far toward client/server until next year, when Software AG is due to introduce Natural 2.2 for the major Unix environments.

In the meantime, mainframe applications now going up that use Natural, Construct and Adabas are being written to be fully compatible with a subsequent client/server implementation.

Pieces of the application can be moved to a Unix environment with only minimal effort, McRae said.

The key to making that work is the combination of Natural and Adabas, according to Phelps Dodge. In a distributed environment, additional software from Software AG will transparently intercept application program interface calls and send them to Adabas, regardless of where the program logic and the database are in the network.

"So many people are waiting to go client/server until they have all the pieces, because no [vendor] is really delivering a good client/server implementation environment yet," said Greg Hagen, program marketing manager at Software AG. "But Phelps Dodge is not waiting. When we deliver Natural 2.2 for Unix platforms, they'll be able to take pieces of the mainframe applications and just move them on down."



Metals processor Phelps Dodge *is counting on recycling applications*

Update: NT development

Not a chore — if you already know Windows

BY CHRISTOPHER LINDQUIST
CW STAFF

If your company plans to develop products for Microsoft Corp.'s Windows New Techology (NT) after it ships in the spring, it may be wise to take some advice from some software vendors already caught in the throes of moving to the new operating system. From what several developers are saying, the shift may not be all that traumatic.

"If you know Windows, it's not so bad," said Marc Singer, owner of Straylight Software in Oakland, Calif. Singer ported his Windows-based Razor data analysis tool in about a week. "If you don't know Windows, you have to learn all the Windows stuff first."

"All the Windows stuff" may be a bit of an overstatement, however. According to David Lee, a senior computer scientist at Inference Corp., an object-oriented tools maker, developers no longer have to learn the "stupid programmer tricks" necessary to write Windows code. "Under NT, it's 32 bit, and you don't have to worry about a lot of stupid limitations," such as memory handling, he said.

There are other things to keep in mind, however. One is that corporations may want to run an application on something other than an Intel Corp. platform in the future. "Writing good solid code in a language you can port," such as C, is very important if you want to take advantage of the multiplatform capabilities of NT, Singer said.

That sentiment was shared by Douglas Hamilton, president of Hamilton Laboratories in Wayland, Mass. In fact, Hamilton noted that current versions of the

Continued on page 66

Client/server without the politics is it

BY GARRY RAY
CW STAFF

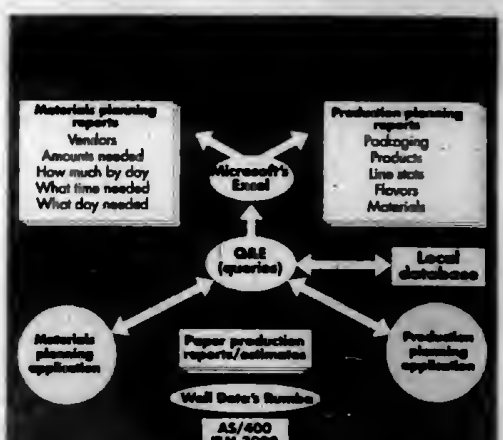
Talk of downsizing and client/server computing often brings to mind grand, strategic visions and a major rethinking of corporate computing systems. The hidden cost, as many companies have been discovering, is sometimes a significant disruption of existing lines of authority and communication.

In short, client/server sometimes forces a realignment of corporate policies and politics.

But Atlanta's Coca-Cola Enterprises, the administrative and manufacturing arm of Coca-Cola USA, has recently created a number of client/server applications that provide local manufacturing support without the political disruption that often accompanies new business systems.

Heading the effort has been Robert Gordon, an applications planning and development specialist who is just now completing

Continued on page 68



CW Chart: Michael Siggins

Slate ships PenApps tool

BY KIM S. NASH
CW STAFF

SCOTTSDALE, Ariz. — Slate Corp. began shipping PenApps Version 1.0 for Windows, an application-building tool for creating programs for pen-based systems.

Aimed at end users and third-party software makers, the product provides reusable objects for weaving pen computing features into new applications.

For example, PenApps lets developers create applications that recognize ink as a data type as well as cursorless operation without coding such options from scratch.

PenApps is available now for Microsoft Corp.'s Windows for Pen Computing operating system, with a version due out for The PenPoint system from Go Corp. in February 1993.

Applications created with PenApps will be portable across multiple pen systems, according to a Slate spokesman.

The product, priced at $995 for a standalone version, includes a screen designer, a database and PenBasic, Slate's programming language.

Single run-time licenses are $49, and unlimited run times are available for $2,995.

Update: NT development

CONTINUED FROM PAGE 65

tools available for writing Windows NT applications were more stable on Mips Computer Systems, Inc. platforms than on Intel platforms, simply because they adhered more stringently to ANSI C standards.

Hamilton ported some 90,000 lines of OS/2 code for his product, the Hamilton C Shell, which recreates a Unix environment, in about three months. For the most part, he said, the move was straightforward, requiring primarily some remapping of application programming interface calls with defined macros and writing some subroutine libraries. "The strategy that was important to us was to recognize that a lot of things are the same except that the names are changed," he said.

If something could not be fixed with either of those techniques, it was time to do some rewriting. However, even in those cases there were advantages when it came time to debug the code. After you recompile, "if the thing doesn't work, it's in the five lines of code you changed," he said. However, for early developers, using the supplied debuggers to find that error can be a harrowing experience.

While Windows NT is very stable, the tools, at least at this point in the beta testing, are not 100% reliable. The biggest weakness seems to be the debuggers. The NT Symbolic Debugger was described as "a throwback" while WINDEBUG, the Windows NT-hosted debugger, is reportedly called "Windbag" inside Microsoft.

"I'm hoping I'll be able to use Posix-type tools," Singer said, noting that the current crop of DOS-bred tools are not built to handle the stresses of developing for Windows NT. And even if the tools work with one version of the beta-test program, they may not with the next.

"The companies that come out with the compilers are not up to speed, so you end up getting a new release of Windows NT but you really can't do anything with it until the compiler companies get their software running on it," said Kathryn Gray, president of GrayTech Software, Inc. "That's something we weren't counting on."

Despite some of the problems, the developers were unanimous in their belief that the move should not be overly difficult.

Developer's checklist

The following are things to think about when you begin writing or porting applications to Windows NT:

- If you plan to port to non-Intel platforms, be sure to write solid, ANSI-compliant C code so recompiling will be easier.
- Porting OS/2 applications can be straightforward using macros and subroutines.
- If you are starting to develop before the final release, be prepared for less than stellar development tools and lags between beta-test shipments of Windows NT and the next release of the tools, particularly from third-party vendors.
- Knowing Windows first helps tremendously in working with NT, but it does not flatten the learning curve entirely. In fact, you may not need to be as skilled a Windows programmer for Windows NT as is necessary for Windows 3.1 because Windows NT removes many barriers with its 32-bit architecture.
- If you plan to port 16-bit Windows applications, the closer they are to being pure Windows 3.1 programs, the easier your port will be.
- It may be a faster process than you expect.

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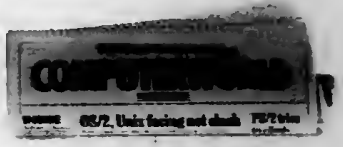
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The Newspaper of IS

Client/server without the politics is it

CONTINUED FROM PAGE 65

the second stage of a set of manufacturing planning applications that will be used in more than 40 Coca-Cola plants across the country. Intended to fit with the decentralized structure of Coca-Cola Enterprises, the applications were designed to provide better cost controls and more efficient manufacturing schedules as well as to support the notion of just-in-time delivery by the company's local vendors.

Prior to the applications, "planning was just a guesstimate. Now the production planners know the exact yield they need to produce," Gordon said.

Coca-Cola's decentralized structure provided both the impetus to develop the applications and a clear, guiding force for the implementation of the programs. A prior effort on minicomputer and mainframe systems "wasn't acceptable to users," Gordon said. "People would turn around with what they got from the mainframe, put it in a PC spreadsheet, shuffle it around and print and distribute the reports."

Coca-Cola Enterprises also recognized that local facilities had a better understanding of their own production requirements and what they wanted from the planning software, Gordon said. Thus, the company charged him to develop applications that fit the needs of local facilities.

Partially owned by Coca-Cola USA, Coca-Cola Enterprises provides administrative support for approximately 40 regional facilities. At each facility are a local production planner and a materials estimator, whose functions are to analyze corporate sales and quota projections for the coming week. "We normally plan a week in advance," Gordon said. Once done, the planner and estimator prepare production and materials plans for their local facilities.

Production plans include all of the local resources needed to meet corporate sales plans, including beverage ingredients, packaging and the manufacturing lines that will be run during the week. These plans are then turned over to local warehouse and manufacturing line foremen who prepare for the week's production.

A local materials planner analyzes the sales plans to determine all of the components needed to support the week's production run. Such materials include beverage containers, bottle caps, cartons and the amount of syrups and concentrates used to create a variety of beverages.

Rallying the troops

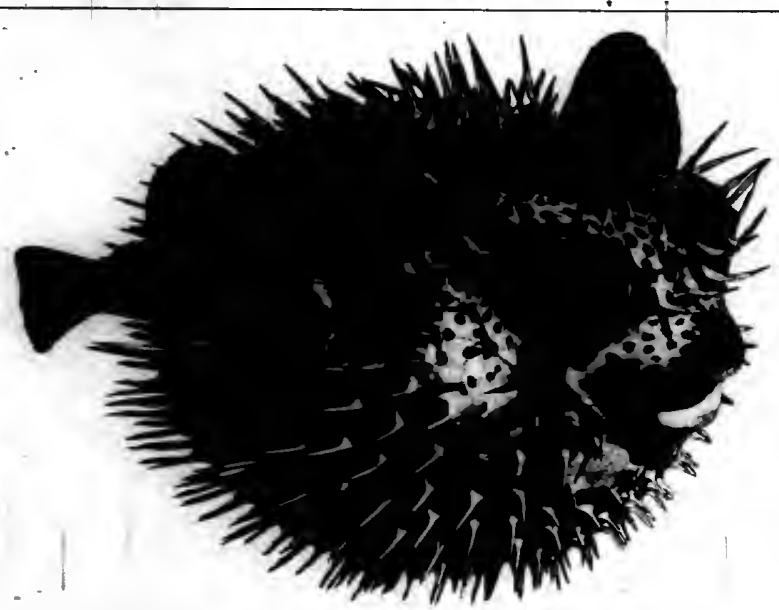
To create the applications, Gordon first rallied the participation of 12 production planners and business application specialists from six business groups.

The team first selected a set of application tools that included Wall Data's Rumba to download corporate planning reports from mainframe and minicomputer systems; ProtoView Development Corp.'s Protogen 3.0 to develop the query and reporting interface to the applications; Pioneer Software's Q+E to select data from local production databases; and Microsoft Corp.'s Excel for Windows to provide reports. The applications were sewn together to present a seamless interface to users.

The next step, Gordon said, was a four-month prototyping and development effort. "Five users from the College Park [Ga.] facility were involved in the development of the software. There was a lot of prototyping at the production center."

The production application has been delivered to all of the 40 regional facilities. The materials estimating program, which will be used to place local vendor orders on a daily and hourly basis, is being delivered this month.

But from Gordon's perspective, the biggest success of the programs is that they maintain the decentralized focus of Coca-Cola Enterprises and its regional facilities. By localizing the software and stepping away from a mainframe orientation, the regional plants "can continue to manufacture their products, even if they never hear from us."



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IN BRIEF

Easel tools now shipping

■ **Easel Corp.**, the Burlington, Mass.-based vendor of application development tools, is now shipping the Easel Transaction Server (ETS) tool kit and the $995 EDA/SQL Option for Easel workbench. The tools provide access to a number of industry-standard database products from within Easel applications. The ETS tool kit will be delivered at no charge to all Easel customers.

■ **Texas Instruments, Inc.** signed up Greenwich, Conn.-based Ceridian Network Service to help users learn and deploy TI's CASE workbench. Ceridian forms the base of TI's new Integrated CASE Environment Services (ICES) consulting group, which can also be contracted to handle operations and administrative services associated with software development while users focus on building applications with TI's tools. ICES will also be based in Greenwich.

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NEW PRODUCTS

Application development tools

Treehouse Software, Inc. has released Profiler for Natural.

The product is a tool that monitors the execution of a set of Natural programs. It produces statistics that display how often each program is executed and how much CPU time each program consumes. The same information is provided from within a program. The tool can also record the time it takes to complete Adabas calls from within Natural programs.

Profiler offers a range of functions such as identifying problem programs and statements, inappropriate use of external subroutines, inefficient code, poor application structure and design and expensive Adabas access methods.

The introductory price is $12,000.

Treehouse Software
Suite 206
400 Broad St.
Sewickley, Pa. 15143
(412) 741-1677

Set Laboratories, Inc. has announced PC-Metric for C Version 4.0, an upgrade to the company's software measurement and analysis package.

According to the company, the product can help locate especially complex parts of code that are more likely to contain programming errors. Features include IEEE-standard-size counting measures, additional new measures of control flow complexity and a revamped interactive query and analysis system that enables users to track metrics across releases.

A single-user license for Version 4.0 costs $399.

Set Laboratories
26976 S. Highway 213
Mulino, Ore. 97042
(503) 829-7123

Franz, Inc. has introduced Allegro CL/PC, a full-featured object-oriented programming solution.

The product is an interactive development environment for PCs that was designed for Microsoft Corp.'s Windows and based on the Common Lisp Object System. Users can build and maintain applications such as knowledge-based systems, scheduling and process control, computer-aided design, simulation and modeling or any graphical user interface-based system.

The Allegro CL/PC features tools such as a programmable integrated editor, inspector, debugger, tracer and structure editor. Common Graphics, an object-oriented layer on top of the Windows application programming interface, is also featured.

Allegro CL/PC costs $595.

Franz
1995 University Ave.
Berkeley, Calif. 94704
(510) 548-3600

Code libraries

EMS Professional Software has started shipping an expanded version of the dBUtility Library.

The library is a collection of 2,422 public domain and shareware products designed for Xbase languages such as dBase, FoxPro and Clipper.

According to the company, a database index and search program is included for these and 1,000 additional commercial Xbase-related utility programs. Users can search by name, vendor and type.

The dBUtility Library provides more than 70 types of products, including benchmarking, computer-aided software engineering, data compression, desktop publishing and printer control.

The library costs $179 on disk and $99.50 on CD-ROM.

EMS Professional Software
4505 Buckhurst Court
Olney, Md. 20832
(301) 924-3594

TechWorks International has introduced Volume 1 of the TechWorks CDF Library.

The library is a set of 36 ready-to-use Custom Defined Functions (CDF) offering DOS and OS/2 DataEase users the ability to enhance applications.

The SQL Server-access functions enable SQL CDF to retrieve one or multiple values from Microsoft Corp.'s SQL function. This can be done without employing DataEase International, Inc.'s SQL Connect Engine Driver.

From within DataEase, the Array CDF can use the CDF to initialize, load, search and access text and numeric arrays.

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Assignment: RE-ENGINEERING

It's not academic:

Columbia University is linking up and scaling down in a five-year project that can teach corporations a few things about involving users



Joyce Ravid

Mike Marinaccio: *'We're not here to run a bureaucracy'*

BY MELINDA-CAROL BALLOU

Like many others, Mark Olson wanted distributed computing to help improve the efficiency of services at Columbia University. Instead, Olson, the school's vice president of student financial and information services, faced what he describes as *disintegrated* computing.

"Local PCs were tied in through creative ways to the mainframe," Olson explains. "But it was all undocumented and very fragmented." The result was a patchwork system that relied too heavily on an overworked, batch-oriented IBM mainframe running CICS and Systems Network Architecture, he says.

So two years ago, Columbia, a 238-year-old private institution located in New York, decided that it waa time to graduate from a tangle of poorly connected systems, including many that were off-line altogether, to a downsized, client/server environment that includes an IBM Enterprise System/9000 mainframe, RISC System/9000 Unix technology and Transmission Control Protocol/Internet Protocol.

Today, Columbia is halfway through a five-year re-engineering plan that officials say will fundamentally change how business is done at the school's 15 colleges.

The information systems department is made up of 180 members, many of whom are now working to bring several key functions on-line, including accounting, alumni resources, facilities management, human resources and a student information system to handle billing and registration, financial aid, admissions and housing (see chart page 73).

Ballou is a *Computerworld* senior writer.

New technology curriculum

To bring its computing into the next century, Columbia is employing several new tactics and technologies, including short-term outsourcing, a software partnership with American Management Systems, Inc. — the Arlington, Va.-based consultancy working on the project — and a state-of-the-art imaging system that will be rolled out in the financial aid department on Dec. 7. It is also bringing together IS applications directors and end users.

"The system is not viewed as being run by those people over there in the central computing office," says Mike Marinaccio, Columbia's deputy vice president for administrative IS. "They take responsibility for the system, with us supporting them. We're not here to run a bureaucracy."

While higher education is usually not thought of as a hot-bed for re-engineering, Columbia's case points out that colleges and universities need to radically rethink processes and technology as much as anyone — and in some cases more. And their freedom from typical corporate constraints can even add a new twist to business process redesign.

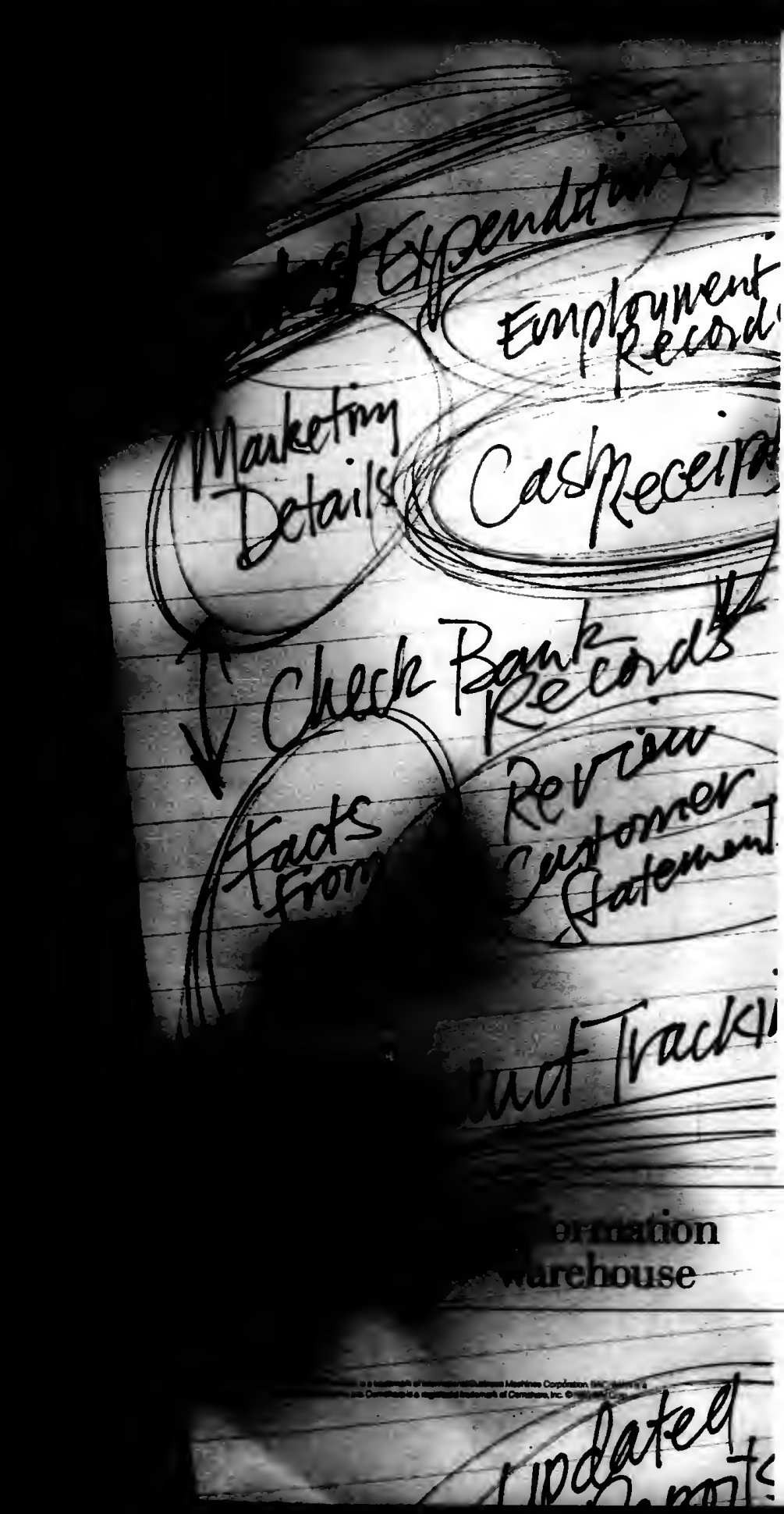
At Columbia, day-to-day business depended on an older mainframe that officials say was heavily modified and very unstable. Marinaccio says a centralized processing structure meant that information was not always accessible from the mainframe, forcing the growth of redundant "shadow" systems. The result? IS had to maintain both the small-scale redundant systems and the large central organizations, a situation no one liked.

"When I looked at what was going on with those shadow systems," Olson adds, "it wasn't distributed or decentralized computing. It was disintegrated computing."

So IS began to review the human resources available to set up a new organizational structure. American Management was hired to assist and provide software for the student information system via a temporary, six-month outsourcing arrangement. (Columbia and American Management will jointly develop software for the accounting system.)

Olson was hired away from the University of Southern California (USC), where he headed a sim-

Continued on page 73



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Re-engineering: Not an academic assignment

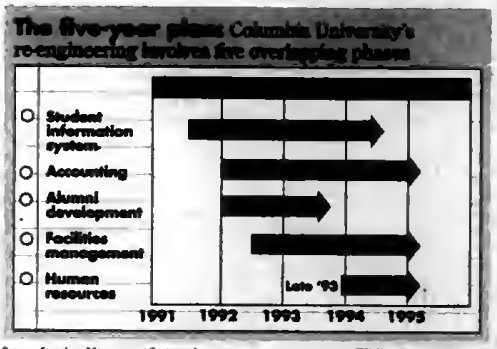
CONTINUED FROM PAGE 71

ilar project to create a new student financial and information system.

Meanwhile, Marinaccio was hired to focus on technology infrastructure — networking and the configuration of platforms and applications for business operations.

"We think that it is critical to organize for distributed computing in a distributed fashion," Olson says. "I have responsibility for end-user computing with bursars and others located in my office, for instance."

The five-year plans: Columbia University's re-engineering involves five overlapping phases



Source: American Management Systems, Inc. CW Chart: Stephanie Faucher

User ownership

Those in charge of the project realized that users, despite possible benefits, were likely to resist sweeping changes in process or technology. So to foster a sense of ownership, they made it a priority to heavily involve users right from the start — an IS basic that becomes crucial in a re-engineering project.

To that end, Olson worked directly with the student and financial offices to incorporate their requirements. "The users as well as the systems people responsible for this application area report to me — the bursar, the registrar, the financial services director and the systems director for this project are all on the same staff," Olson says. "As organizations implement open systems and client/server, there has to be a concomitant organizational change. Our model offers application support in the end user's office."

Together, they reviewed billing procedures and financial systems, as well as how to set up the imaging program and how financial aid is delivered.

Industry analysts and experienced hands affirm that perhaps more than any other factor, closely involving users can make or break their satisfaction — and the entire project.

"Users are telling MIS that the empowerment they want goes beyond having a PC running shrink-wrapped applications," says John Logan, executive vice president at the Aberdeen Group, a market research firm based in Boston. "They want the ability to dictate [not merely influence] how they do their jobs in the best way."

Olson acknowledges that this requires that both IS and users be willing to accept a major cultural shift and let go of worrying about boundaries. "With distributed computing, you need to do it," he declares.

Fernin Vigil, a controller who worked closely with the IS department at USC, which had tackled a similiar initiative, agrees that there are few better ways to boost user satisfaction than to involve end users in an "iterative" dialogue.

"You can't be rigid and you have to understand what your objective and goal is," he says. "The people who operate the systems have to be happy with them."

Of course, adds Joe Mullinix, senior vice president at Columbia, old-fashioned persuasion plays a big role too. "We avoided telling anyone that they had to unplug anything," he says. "But we eventually convinced [users] that they wanted to."

The homework: A number of systems must be created

- **Facilities management system**
  Comprehensive support for facilities functions including operations and maintenance; design and construction; and space and equipment.
- **Image-based financial aid system**
  Folder management and work-flow processing for paper-intensive process.
- **Research system**
  Unix-based; designed to streamline all facets of sponsored research acquisition and administration.
- **Decision support system**
  Designed to provide access to information that crosses old and new administrative systems.

Source: AMS, Inc. CW Chart: Stephanie Faucher

Starting small

When the requirements analysis was completed, the Columbia teams developed a five-year plan, including smaller segments that could be successfully done to gain further project funding.

"We painted a pretty comprehensive picture," Marinaccio says, "making sure that we can create a good business case for each of the pieces."

The student information systems project went into full-swing in March 1991. By last December, all 15 colleges at Columbia began billing nearly 20,000 students on the new system.

The job required the conversion of about 130,000 student records, 6,000 course records and 400 detailed billing records from the old system.

"We still have a long way to go," Mullinix says. "But up front we decided to dramatically improve our billing system as a top priority."

Payoffs seen

Although the project is only about half completed, Columbia officials say there have already been several benefits.

Now, for example, students no longer have to wait in long lines at a central gymnasium to register. Instead, they can simply go to one of four sites and register online; dial-up registration is planned for the future.

Financial aid has also improved, Olson says. "In the past, the financial aid forms from families would go to the financial aid office. Now the forms will go to central processing, which reports to me. We will make images of the forms."

The new arrangment, Olson says, will give financial aid advisers more time to counsel students rather than chasing paper.

The imaging program goes live early next month for the financial aid office. Electronic file folders will be created for applicants and will become accessible by next February — a relatively fast turnaround that Mullinix says is necessary to keep user interest and trust high.

"You have to move very quickly to get the product out into the community," he says. "The overall plan may take years, but they need to see some sort of results within 12 to 18 months."

Other portions of the plan will be implemented from now through 1995 (see chart at left). For now, technological work continues. Workers are now considering distributed data management using Sybase, Inc. equipment together with DB2 across multiple enviroments.

Besides keeping up a tight partnership with user departments, Mullinix says, the teams will make sure they don't lose sight of the forest just to please.

"You don't have to have all the pieces precisely defined," he concludes, "but you need to have a conceptual vision that you can keep your eye on, or you tend to lose your way along the route and end up with a product that doesn't meet your objectives." ■

The syllabus: Multifaceted goals underly work with consultant AMS

- **Strategic systems planning**
  Build framework for five-year replacement of administrative systems and evolution to open systems.
- **Implement AMS Legend applications**
  Financial package is cornerstone of five-year plan; implemented in 1991.
- **Develop administrative information architecture**
  AMS and Columbia jointly develop enterprisewide information architecture.
- **Create systems strategy**
  Jointly build and migrate applications to open environment.
- **Develop new applications**
  Jointly build new products and extensions to existing projects.
- **Implement imaging technologies to improve business processes**
  Co-develop financial aid imaging applications. Goal is to establish single center to serve 15 financial aid offices.

Source: AMS, Inc. CW Chart: Stephanie Faucher

Canion warns re-engineers: Beware of outsourcing dangers

BY MARK HALPER

HOUSTON — While outsourcing vendors may provide the right solution for some information systems challenges, they should not be entrusted with ultimate IS responsibility, according to former Compaq Computer Corp. Chief Executive Officer Rod Canion.

Canion, who is chairman of Insource Management Group, Inc., an IS consultancy that he co-founded in June with former Electronic Data Systems Corp. and Perot Systems Corp. executives, says he views outsourcing as just one possible element in a re-engineering scheme.

"We are not against the component of outsourcing," Canion said in a recent interview with *Computerworld*. "What we are against is for the outsourcer to be in charge of information systems. There is a fundamental conflict in that the outsourcer runs the system and is paid by transactions that flow through it," Canion observed.



Rod Canion *cites outsourcing pitfalls*

Good bets for outsourcing

Canion said it makes more sense to outsource some functions than others.

For instance, banks could outsource "commodity functions" such as check clearing while keeping IS support of their differentiated services in house, he said.

Meanwhile, Insource Management has added another former outsourcing executive to its ranks.

Charles Biebighauser, who was vice president of operations for the Intrico travel industry consortium, which oversaw the now-defunct Confirm reservation system project, has signed on as a principal. He started Nov. 2.

Biebighauser, also an EDS veteran, will be responsible for business development and "helping to define our strategy," acording to Canion. He reports to CEO Ron Fischer, a former EDS and Perot executive, and joins a staff that includes Perot co-founder Gary Wright.

Biebighauser characterized the re-engineering business as "a less greedy approach" than outsourcing and one that "in three to five years will be as big a business as outsourcing."

Ergonomics: Early fixes

BY MITCH BETTS
CW STAFF

MELVILLE, N.Y. — Even enlightened managers who want to relieve the aches and pains of intensive keyboard work may balk at spending $10,000 for ergonomics consultants. But a new service from Biomechanics Corp. of America makes getting an ergonomics report card much more affordable.

Biomechanics recently introduced a service dubbed Early, for Ergonomic Assessment of Risk and Liability, that helps employers of all sizes to identify repetitive stress problems and solutions. In essence, the service allows company employees or local contractors to collect the relevant data and send it to the company's ergonomists for expert laboratory analysis.

An Early report costs about $300 for a job category, such as data entry clerk.

"To have a team of ergonomists fly out and conduct ergonomic assessments would be cost-prohibitive — over $10,000 when you include travel expenses, time and everything," said Andrew Ellis, senior loss-control consultant at Tokio Marine Management, Inc., a Pasadena, Calif.-based insurance firm.

Biomechanics is recruiting a network of occupational health professionals across the country who are trained to do the data-collection work.

The relevant data includes company statistics on health problems, a videotape of typical work activities, an employee survey on physical stress and, most importantly, actual measurements of muscle tension registered by an ergometer supplied by Biomechanics.

Other benefits

Besides low cost, the other advantage of the Early system is that it produces some hard data, Ellis said. "Traditionally, workstation assessments have been rather subjective. The Early system is a much more standardized and formal approach that leads to a quantitative assessment," he added.

About seven days after getting the data-collection forms and other information, the Biomechanics laboratory produces a detailed report that identifies problems and offers solutions.

For example, at one company, there was not enough room above a computer monitor for proper height adjustment because of the office's overhead flipper door cabinets. In addition, the worker's chair did not provide arm support for keyboard work.

These observations coincided with high measured levels of muscle stress on the left hand and wrist, as well as the back. The report, citing specific manufacturers' products, recommended an adjustable monitor arm and an adjustable task chair with armrests.

The emergence of Biomechanics' Early service comes at a time when the U.S. has experienced a tenfold increase in repetitive stress injuries in white-collar jobs during the past five years [CW, Sept. 21].

Ideally, the Early reports will help companies identify problems and solve them before they result in injury claims, according to Chris Maynard, director of ergonomic programs at Biomechanics.

The Early reports draw from a database full of scientific literature and thousands of ergonomic studies, Maynard said.

EXECUTIVE TRACK



James L. Bradley has been named vice president at New York-based information management consulting firm **Howard Systems International, Inc.** Bradley comes to Howard Systems following 25 years at Aetna Life & Casualty Co., where he most recently served as vice president of telecommunications.

In his new post, he will head up and expand the firm's "insourcing" program, under which Howard information systems professionals are placed in client organizations to lead internal IS initiatives.

. . . . . .

At the **Indian Health Service** in Rockville, Md., **Richard M. Church** was recently named to the post of associate director of the office of information resources management.

Church, a 20-year veteran of the **United States Public Health Service** (PHS), recently completed a four-year term as the PHS' chief professional officer for pharmacy, a job he held in addition to that of chief pharmacist at the Indian Health Service.

He is a winner of the Surgeon General's Medallion, the highest honor given by the U.S. Surgeon General.

. . . . . .

There's extra spice in **C. Robert Miller's** life these days: The former IS director of Sparks, Md.-based **McCormick & Co.'s** flavor division has been named vice president of IS at the company he has served since 1967.

Miller will have worldwide responsibility for the integration of information technology into the seasonings company's business plans.

. . . . . .

The Rockefeller University has announced the appointment of **Francis (Frank) Lees** as its new director of information and computing services — the New York-based university's highest IS position, equated to that of a chief information officer.

Lees comes to Rockefeller from the **State University of New York** at Albany, where he was an associate professor of bioanthropology as well as associate vice president of IS and technology.

In his new post, he will spearhead Rockefeller's effort to streamline and consolidate four current IS-related departments into a single information center.

This is the company you see in your rear-view mirror,

lights flashing,

passing the pack,

shouting client-server computing.

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Items of interest from publications, speeches, surveys and research projects

To pilot or not

The conventional wisdom is that companies interested in imaging systems should begin with a small pilot demonstration.

But Ron Landers, director of expenditure accounting at Pizza Hut, Inc., argues that pilots are too expensive and disruptive for their meager benefits. Instead, he says companies should do coosiderable up-front analysis and then take the imaging plunge.

"In the world of image processing, we are far beyond the tire-kicking stage. It's time to buy the car," be says.

In a counterpoint article, consultant Len Yencharis argues that imaging pilots in departmental applications can provide the evidence needed to cost-justify enterprisewide applications in the future.

Source: *"Are pilot installations necessary for successful imaging systems?" by Ron Landers and Len Yencharis,* Imaging World, *September 1992.*

To the back office

Traditionally, companies have focused on the quality of their products and have tried to improve customer service by beefing up the sales force. Today, progressive companies are learning that investing in "administrative quality" in the back office is equally important.

Back-office problems that generate invoices with the incorrect price or deliver the wrong goods can ruin customer relations and cause considerable internal disruption.

Where to concentrate remedial effort? Lines of communications between sales, inventory and accounting departments.

Source: *"Cleaning Up The Back Office," by Christopher A. Bielenberg, Directors & Boards, Summer 1992.*

Tips for targeted marketing

If you've built a customer database for targeted marketing, how can you use it to market smarter? Here are three ideas:

- Assign customers a unique identification number, or use Caller ID, so customer service representatives can quickly retrieve the customer's computer file and provide customized service on the phone.
- Ask every 10th caller a few questions about the current product line and future products or incentives. Enter this polling data into the customer database and analyze the trends.
- Use the database to generate repeat orders. For example, mail reminders to your customers that they may want to reorder or upgrade the holiday gifts they ordered last year.

Source: *"Three Ideas for Smarter Marketing," by David Shepard and George Orme,* DM News, *Sept. 21, 1992.*

Rock 'n roll server

"Implementing client/server is like guitar-playing," says Fred Wingograd, vice president of distributed applications planning at Merrill Lynch & Co. and former rock band member. "You learn a few chords, you get something done, and you evolve from there."

Source: *Remarks made at the annual "CIO Perspectives" conference Oct. 11 to 14 in Boca Raton, Fla.*

Compiled by national correspondent Mitch Betts, with contributions from Joanne Kelleher, features editor, and James Daly, senior correspondent.

CALENDAR

NOV. 22-28

Openforum '92. Utrecht, The Netherlands, Nov. 23-27 — Contact: Uniforum, Santa Clara, Calif. (408) 986-8840.

NOV. 29-DEC. 5

Technical Marketing 2000: Opportunities and Strategies for a Changing World. Washington, D.C., Nov. 30-Dec. 1 — Contact: Technical Marketing Society of America, Torrance, Calif. (310) 534-3922.

European Conference on Hypertext '92. Milan, Italy Nov. 30-Dec. 4 — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440.

Cause '92. Dallas, Dec. 1-4 — Contact: Cause, Boulder, Colo. (303) 449-4430.

The Open O/S Conference. San Francisco, Dec. 2-3 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3060

EO/IR Sensors Seminar. Orlando, Fla., Dec. 2-4 — Contact: Advanced Technology International, Dept. EO/IR, Washington, D.C. (202) 223-8840.

Improving Employee Performance Using Technology. New York, Dec. 2-4 — Contact: RIS Strategic Decisions, Norwell, Mass. (617) 982-9500.

Corporate Information Management Conference (CIM). San Diego, Dec. 3 — Contact: Susan Miguel, IMS, Tiverton, R.I. (401) 683-5760.

Environmental Marketing and Contracting Conference. Washington, D.C., Dec. 3-4 — Contact: Technical Marketing Society of America, Torrance, Calif. (310) 534-3922.

14th ACM Symposium on Operating Systems Principles. Asheville, N.C., Dec. 5-8 — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440.

The Migration to Client/Server Computing. Dallas, Dec. 3 — Contact: Informart, Dallas, Texas (214) 746-3500.

DEC. 6-DEC. 12

Software Support '92. Monterey, Calif., Dec. 6-9 — Contact: United Publications, Inc., Yarmouth, Maine (207) 846-0600.

Supporting and Troubleshooting Windows 3.1 Seminar. Seattle, Dec. 7-8 — Contact: Data-Tech Institute, Clifton, N.J. (201) 478-5400.

Wireless Between '92 Exposition and Conference. Boston, Dec. 7-9 — Contact: Communication Events, Norwalk, Conn. (203) 847-5131.

Computer Measurement Group (CMG) '92. Reno, Nev., Dec. 7-11 — Contact: CMG '92, Department 77-5105, Chicago, Ill. (312) 527-6652.

Image World Atlanta. Atlanta, Dec. 7-11 — Contact: Benin Roumania, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

The 1992 Federal Computer Conference. Washington, D.C., Dec. 8-10 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.



May we introduce ourselves?

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Nearly four billion dollars in annual revenue later, it can safely be said nor aim was true.

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We are the only UNIX-based computer company that can offer compatible, scalable chip technology for notebook computers to supercomputers, with SPARC® and Solaris® operating enviornment.

As well as the only computer compaoy with 16,000 service and support experts io UNIX, in 66 centers around the world.

And that's just the view from *our* rear-view mirror. To find out how you can lower your computiog costs while raisiog productivity, call 1-800-426-5321, ext. 500. And ask to see where client-server computing is headed.

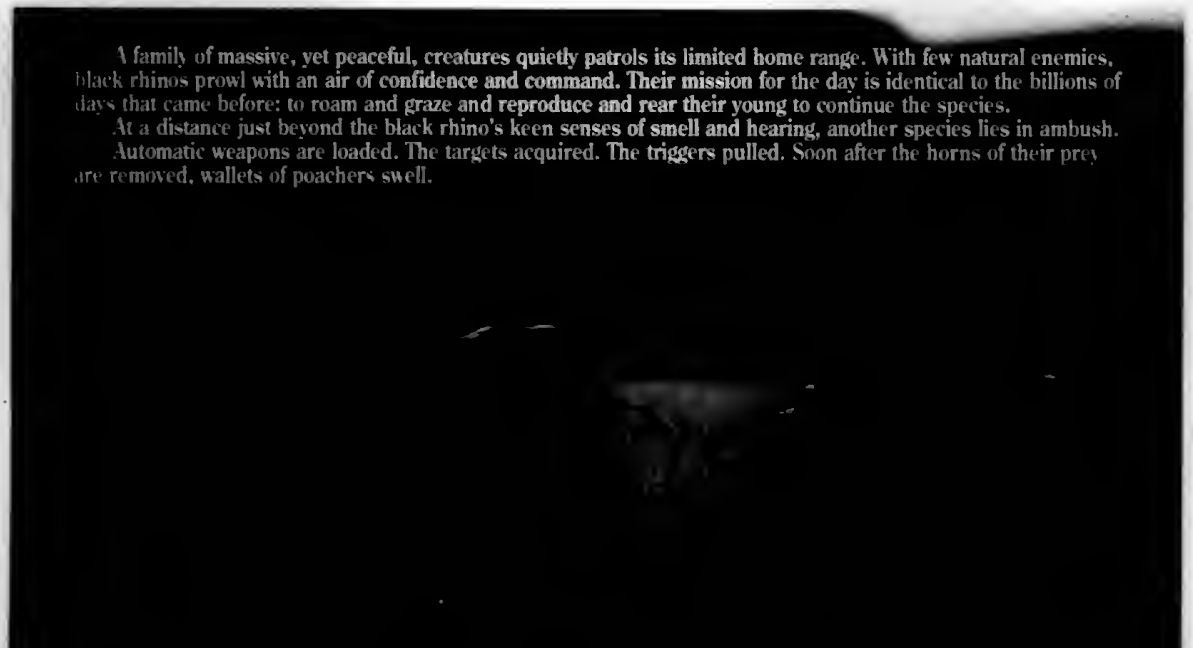
Sun

Sun Microsystems Computer Corporation
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A family of massive, yet peaceful, creatures quietly patrols its limited home range. With few natural enemies, black rhinos prowl with an air of confidence and command. Their mission for the day is identical to the billions of days that came before: to roam and graze and reproduce and rear their young to continue the species.

At a distance just beyond the black rhino's keen senses of smell and hearing, another species lies in ambush.

Automatic weapons are loaded. The targets acquired. The triggers pulled. Soon after the horns of their prey are removed, wallets of poachers swell.

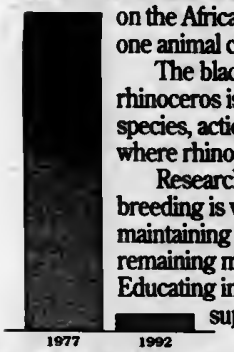


EXTINCTION IS A HIGH PRICE TO PAY FOR A NIGHT ON THE TOWN.

Today on the African plain, a magnificent animal will be slaughtered in order to provide a psychological lift for someone living thousands of miles away.

When ground, the horns of the black rhinoceros are reputed to be a strong aphrodisiac. Powdered, the horns are alleged to be potent medicine. Carved, black rhino horns make handsome handles for daggers.

As poachers supply the demand for horns, the black rhino is vanishing. Every dehorned carcass left on the African landscape brings the species one animal closer to extinction.



Since 1977, more than 95% of the black rhino population has been lost, along with the lives of scores of human defenders.

The black market for horns of the black rhinoceros is flourishing. To save the dying species, action is now required in the fields where rhinos dwell.

Research into black rhino behavior and breeding is very important. Establishing and maintaining areas of safe refuge for the few remaining members of the species is critical. Educating individuals and seeking their support has never been more vital.

The bottom line, however, is that unless the poachers are stopped there will soon be no living black rhinos left in the wild to study, support, or safeguard.

While our mission includes support for research, education, and habitats, our focus is to stop the tragedy of killing black rhinos for their horns.

We're working directly with experts and groups engaged in the fight for the black rhino's future. We also hope to work with you.

That's why we're also actively seeking your help on behalf of an animal that lives and dies far away from us all. A beast, not of beauty, but of true peace and strength.

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From art *to* part



Marty Braun

Desktop manufacturing lets companies transform CAD data directly into parts and models without ever going to a machine shop. The benefit? Up to a 95% reduction in costs and time to market.

By Anil (Neil) Chaudhry

Day 1, noon — *A product idea gels.* An engineer at a large automotive company and a customer support manager are in the last of a string of lunch meetings to discuss the engineer's new idea for a distributor cap design. His co-worker confirms that the part has been giving customers trouble and needs improving.

The engineer gathers his paperwork, including customer input, and takes the idea to his boss, who approves it.

Day 1, 1:30 p.m. — *Collaboration.* The product engineer takes his scribbled drawing to the computer-aided design (CAD) expert in the design department. They roll up their sleeves and begin to hack out the design for a three-dimensional solid CAD model.

Day 2, 5 p.m. — *A journey.* The CAD model is finished. The product engineer sends the computer image to a desktop manufacturing machine with the click of a mouse.

Day 2, 5 p.m.—8 a.m. — *Machines take over.* The desktop manufacturing equipment translates the detailed design information into a series of precise 2-D cross-sections of the part.

The machine feeds the cross-section data into a computer-controlled ultraviolet laser beam, which scans the surface of a vat of liquid photopolymer.

The photopolymer hardens into a solid layer of plastic when light hits it. A computer-controlled elevator system lowers the hardened layer. The surface is recoated and leveled.

The laser scans and solidifies the next layer. Layers are built on top of one another until the part is complete.

Day 3, 8 a.m. — *The real thing.* A technician lifts the object from the liquid, cleans the excess polymer, cures it in minutes and hands it to the product engineer and designer to analyze.

Day 3, 9 a.m. — *Making the rounds.* The design engineer presents the new design to managers in marketing, customer support and production.

They suggest minor modifications to improve the design and minimize costs. Engineers rework the CAD drawings and resend the design through the desktop manufacturing process.

Day 4, 9 a.m. — *Success.* The new product is approved. The company orders molds so it can manufacture several dozen prototype production parts for qualification testing.

The company has successfully launched a new product.

The process just described, known as desktop manufacturing or rapid prototyping, is being repeated in manufacturing companies worldwide. With an average investment of $300,000 to $500,000, companies can quickly transform CAD drawings into parts and models as big as 20 in. by 20 in. by 30 in. without ever going to a machine shop or machining a tool. The benefit is a 30% to 95% reduction in development cycle time and cost.

Designing a new product has always been a creative but slow process, requiring several iterations to fine-tune a part. Designers need to check with peers, technicians and shop-floor engineers to approve a design. If a change is needed, the process starts all over again; blueprints need redrawing and shop-floor machines resetting.

Each iteration increases the developmental cost of the product and increases the time required to bring a new product to market. That's why catching problems and making adjustments early in the cycle — things desktop manufacturing lets you do — can save bundreds of thousands of dollars.

Whether the computer-controlled process involves a laser that hardens photosensitive liquid into a part or heat that fuses fine powders into shapes, desktop manufacturing techniques are improving the economics of getting products to market faster.

A select group

The list of desktop manufacturing users isn't long, but it is illustrious. Nearly all the major automakers — General Motors Corp.,

Continued on page 78

INSIDE

Descriptions of various desktop manufacturing techniques, including their advantages and disadvantages. Page 8a.

Computer systems and cost specifics. Page 78.

Continued from page 77

Ford Motor Co., Toyota Motor Corp., BMW of North America, Inc. — have signed on, as have aerospace giants The Boeing Co., General Electric Co. and Pratt & Whitney. The technology, commercialized in 1987, is also making its mark in tooling companies — those organizations that create molds, dies, punches and other items used to make production parts.

Organizations are using desktop manufacturing to make prototype parts as well as to create models for testing and for in-house or client critiques.

For Aluminum Company of America (Alcoa), Chrysler Corp. and Ford, desktop manufacturing techniques are key to quickly producing prototypes for review. They can check the models for fit, form and function, making changes to the design as needed — before any huge manufacturing effort gets under way.

Alcoa has trimmed its manufacturing review process from two to three weeks down to two to three days and has also minimized mistakes caused by misinterpretations of manual drawings and prints and miscommunication of design details, says Paul Fussell, who is responsible for Alcoa's rapid prototyping program.

Ford's goal is "to do the up-front work to get better quality in the part," according to Tony Anderson, the senior research and development engineer who oversees the technology at Ford. "We do analysis on the model to verify part properties and optimize properties before a single prototype is built." Only when the CAD model is satisfactory does Ford use it to make tools.

Proving that a design is manufacturing-worthy is one of the ways Chrysler makes use of its $500,000 desktop manufacturing system. By turning its CAD models into prototype parts, the company checks ideas for diesel starter motors, automotive transmission shifter handles, seat belt turn loops and distributor caps.

The company also tests its prototypes under simulated operating conditions. Chrysler part designers and product development engineers tested the Viper's equipment in this way. The automaker has also tested desktop-manufactured parts alongside and sometimes in place of production components. Chrysler says its investment has had a payback of less than one year in cost and time savings.

Fashioning models

Perhaps one of the greatest beneficiaries of desktop manufacturing is the tooling industry, which creates molds and other items used to make production parts.

For most companies, machining a rough bar stock (chunks of solid metal) to make molds, dies or other tools is costly and requires long lead times (several weeks to months). The process is hard to justify, especially in the case of intricate geometric parts and for relatively small lot production runs. Desktop manufacturing systems, on the other hand, enable users to generate prototype tooling rapidly.

Tooling is generated primarily in two ways: one, by using a prototype part as a pattern to make "soft-tooling" (i.e., rubber, epoxy, polymer-based molds); and two, by generating a prototype as a pattern to make "hard-tooling" (i.e., investment cast metal molds).

Another option is emerging from the laboratories at MIT, which are developing a rapid prototyping system called Three Dimensional Printing, which can make ceramic molds directly from the prototyping machine. The ceramic molds can then be used for casting metal parts.

Product development engineers use these desktop manufactured tools to produce actual parts made not of rapid prototype materials (such as photopolymers, wax, paper, etc.) but of real materials (such as polyethylene, aluminum, copper, etc).

Mack Industries, Inc. in Troy, Mich., which specializes in molding parts, building patterns and producing prototype castings, is using a desktop manufacturing method to make models quickly. These models are in turn used for building molds to cast actual parts. According to the company, the time it takes to build a woodlike model using desktop manufacturing vs. conventional techniques has been reduced by days or weeks.

For example, Mack had to supply a front-end accessory drive bracket for a major automotive company and used a desktop manufacturing system to create a 3-D solid model from CAD data. The system in this case reduced the total project time by 34% compared with conventional pattern-making methods. Futhermore, the system can run unattended, except for setup.

Breaking the mold

Other tooling companies are aggressively using rapid prototyping systems not just to provide prototype parts but also to produce a variety of tools for casting, forming and injection-molding applications.

Alpha Mold, Inc. in Dayton, Ohio, for instance, is integrating desktop manufacturing technology with computer-aided design and manufacturing and metal machining equipment to build molds. "A stereolithography model allows the customer to see the part and determine if any changes are required before expensive tooling is started," says Bob Burgess, sales/marketing engineer. (Stereolithography is the process of creating a part layer by layer in a vat of photocurable liquid. See story page 81.)

According to Burgess, Alpha Mold recently completed a project for The Regina Co., the manufacturer of the Electrik-Broom line of vacuum cleaners. Alpha built a part from CAD data to check form and fit before making a final product design decision. Once the design was approved, Alpha was able to use the part as a pattern to create urethane duplicates.

Regina "improved product quality, reduced lead times, as well as lowered overall costs," Burgess says. The company cut the time it takes to make the machine prototype mold by six weeks, he adds. •

Chaudhry is technical transfer manager at the Edison Materials Technology Center in Dayton, Ohio.

Technically speaking

The Edison Materials Technology Center, a materials and processing consortium based in Dayton, Ohio, has joined with key manufacturing companies, the University of Dayton's Rapid Prototyping Development Laboratory and Carnegie Mellon University in Pittsburgh to study the technical side of desktop manufacturing.

Their work concentrates on the development and improvement of desktop manufacturing software, the property and behavior of materials exposed to ultraviolet lasers and laser scanner control using desktop manufacturing techniques to make prototype tooling quickly.

Computer technology developments include the following:

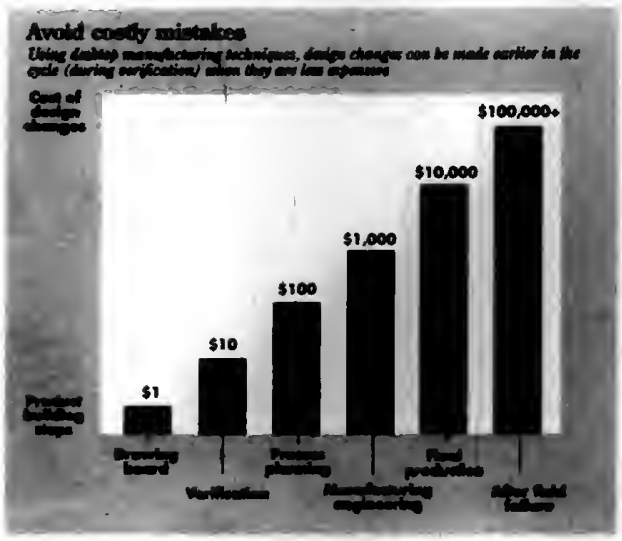
•**The Rapid Prototyping Tool Language (RPTL).** One of the major challenges facing software developers working to improve rapid prototyping systems is in simplifying and streamlining the steps involved in converting CAD data into a 3-D part.

In current systems, the 3-D CAD model must be faceted, sliced and then merged to create a control data file used to fabricate a solid object. In an RPTL-based system, the control unit compiles/interprets the input programs (which carry the layer boundary and laser movement information generated either by a human programmer or a CAD/CAM system) to build the solid part layer by layer.

Thus, RPTL replaces the existing data conversion process with a single program control step. Eliminating intermediate steps reduces the potential for errors.

•**Stereolithographic Apparatus (SLA) Previewer/Editor software package.** Users of SLA technology (which creates parts layer by layer when photocurable liquid gets hit by a laser beam) can view and edit input files before CAD data is merged and the part built.

Because this enables CAD engineers to catch software errors, such as stray vectors or incorrect lines, companies can reduce time-consuming, costly and repetitive part-building steps.



Source: Edison Materials Technology Center

Vital stats

What's needed and what it costs to make desktop manufacturing fly

Desktop manufacturing system	Computer system	Approximate equipment cost
Stereolithography (SLA-500) by 3D Systems, Inc.	386-based controller; Silicon Graphics Unix-based slicing software; STL input format (a de facto standard)	**$385,000**
Solid base curing (Solider 5600) by Cubital America, Inc.	Vaxstation 3100; input from solid models; surface models, wire-frame models; 2-D drawing (semi-automatic); computer-aided tomography and magnetic resonance imaging scanners; stereochemical models; digital terrain models	**$490,000**
Laminated object manufacturing (LOM 2030) by Helisys, Inc.	386-based IBM-compatible; MS-DOS 3.3 and Microsoft Windows 3.0; STL input format	**$140,000**
Selective laser sintering (Sinterstation 2000) by DTM Corp.	386 microcomputer running Unix; STL input format (486 with GUI used in latest models)	**$397,000 - $427,000**
Fused deposition modeling by Stratasys, Inc.	Initial Graphics Exchange Specification format; numerical control program code; STL format; Unix-based slicing software; 3-D wire-frame CAD model; (Silicon Graphics Iris workstation optional)	**$130,000 - $183,000**

Source: Edison Materials Technology Center



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Desktop manufacturing flavors

Finding the right method is not always easy. Here are six techniques, including pros and cons of each.

BY ANIL (NEIL) CHAUDHRY

The list of vendors in the desktop manufacturing world stands at about a dozen. Following is s description of certain leading techniques, including pros and cons:

Stereolithography apparatus
3D Systems, Inc., Valencia, Calif.
Creates a part layer by layer in a vat of photocurable liquid that hardens when hit by an ultraviolet laser.
Advantages:
- Many resins available with varying properties.
- New, patented laser scanning and part-building techniques minimize part shrinkage and distortion.
- Parts can have both internal and external contours and shapes.

Disadvantages:
- Need to build artificial structures to support certain overhanging shapes.
- Part warpage and curl possible.
- Postcuring required.

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Solid base curing
Cubital America, Inc., Warren, Mich.
Works like a three-dimensional copying machine. It uses layer-by-layer photomasks in conjunction with a supporting wax encasement and a high-power ultraviolet lamp to expose an entire layer at a time, as opposed to tracing the profile of a layer with a laser beam as done in 3D's systems.
Advantages:
- Virtually no limits on part shape, including intricate part-within-part shapes (i.e., ball-bearings rotating inside a ball-bearing housing).
- Parts can be fabricated with no additional support structures.
- Liquid is cured; no postcuring needed.
- No curling, warping or swelling during fabrication.
- Entire layer-at-a-time cure process enables parts with wide cross-sections to be produced fairly quickly.

Disadvantages:
- High equipment cost: $490,000.
- Equipment is large (25 ft by 25 ft) and may require its own room. (Other equipment average: under 10 sq ft.)

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Resources

The Edison Materials Technology Center (Emtec) has sponsored three international conferences on desktop manufacturing (rapid prototyping) in Dayton, Ohio. Its next conference is scheduled for June 15-17, 1993, in Dayton.

Emtec recently published a special report on the "Commercialization Opportunities for Selected Rapid Prototyping Techniques." The report is a summary of Emtec's nine-month study to review and summarize the latest developments in the desktop manufacturing industry.

You can obtain more information by calling Emtec at (513) 259-1393.





In selective laser sintering, *a CO_2 laser melts, fuses and solidifies one layer of fine powder at a time until a part emerges. These systems range in price from $397,000 to $427,000.*

Laminated object manufacturing
Helisys, Inc., Torrance, Calif.
A laser cuts an adhesive-coated sheet of paper that is laminated layer by layer to make a 3-D part. Future systems may be able to use high-strength metals, composites and plastics to make rapid prototype parts.
Advantages:
- Can use a variety of thin sheet materials.
- Equipment costs are low: $85,000 to $140,000.
- Part size possibly larger than the current limit (30 in. by 20 in. by 20 in.).
- Possible to make composite parts by alternating layers of any number of materials (i.e., fibers, ceramics, metals, etc.).
- Possible to make tooling on the machine.

Disadvantages:
- Part removal is manual and delicate, as is part cleanup.
- Closed surfaces cannot be fabricated as a single piece.
- Part strength is limited — the paper can absorb moisture and cause distortion and delamination.
- Moisture absorption affects stability, part accuracy and shelf life.

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Selective laser sintering
DTM Corp., Austin, Texas
A carbon dioxide laser scans a layer of fine powder. Because the powder is kept close to its melting point, it melts, fuses and solidifies wherever the laser scans. In building successive layers, the laser must penetrate to the appropriate depth to fuse the top layer and the one below.
Advantages:
- Builds wax models in a few hours from a CAD file. Wax models are used to make investment-casting ceramic shells, which in turn can be used to cast metal parts.
- Possible to make ceramic shells or even ceramic parts directly by having the incoming ceramic powders precoated with heat-fusible plastic. Metal powders, such as brass, copper and bronze, may also be sintered.
- No artificial support structures required.

Disadvantage:
- High equipment cost: roughly $400,000.

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Photosolidification system
Light Sculpting, Inc., Milwaukee
A 140-watt ultraviolet lamp is used to irradiate an entire layer of liquid photopolymer through a photo mask.
Advantages:
- Low equipment cost: $99,600 to 159,500.
- Excellent for high-precision parts with small repetitive features.
- Small minimum slice thickness (.0005 in.) allows for great accuracy and surface smoothness.
- Rigid glass plate minimizes warping during the imaging process.

Disadvantages:
- Manual placement of the photomasks can be very time-consuming.
- Only one photopolymer resin is available with a limited range of properties.

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Fused deposition modeling
Stratasys, Inc., Minneapolis
A filament 1.25 mm (0.050 in.) in diameter feeds into a heated extrusion head and is deposited by a precision pump.
Advantages:
- High-speed process (head goes up to 900 in./min.).
- No wasted material; parts don't require support materials or cleaning.
- Excellent for making investment-casting patterns using wax.
- Uses variety of heat-fusible thermoplastic filament materials and wax filaments.

Disadvantage:
- Part strength limited to adhesion/fusion between filaments.

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- Charles A. Mills
President
Firesign Computer Company

Firesign Computer Company is a data communications software developer with 17 years in the business. Having tripled in size during the past two years, this San Francisco-based compony retains rep firms an the East Coast and in Europe to service a worldwide custamer base that extends as far as Australia and New Zealand. Far President Chuck Mills, finding new sales praspects far the company's flagship product Outbound means advertising in *Computerwarld Direct Response Cards* every manth.

"Outbound's claim ta fame is unattended file transfer. Supporting MVS and VM mainframes and OS/2, DOS, and Windaws PC networks, it is the anly product whase main thrust is unattended mainframe-to-PC file transfer. Virtually invisible ta the PC user, Outbound saves time, pravides flexibility, and eliminates training - all while autamatically ensuring consistent reliability.

"By its very nature, Outbound has a crass-industry and crass-functional appeal, with patential users ranging fram mainframe network software managers ta information center prafessionals ta praject analysts. So when it comes ta targeting aur audience, we need a broad-spectrum advertising vehicle with a broad reader base. It's na surprise, then, that *Computerwarld Direct Response Cards* have proven to be our best choice.

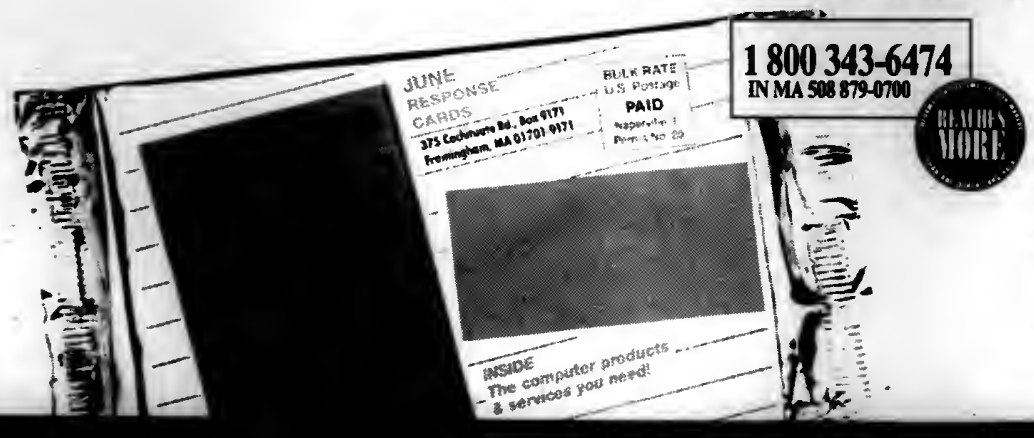
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Off-the-job training: Compete in a triathlon, race a yacht

BY SALLY CUSACK
SPECIAL TO CW

What do skydiving, sailing, rock climbing and triathloning have to do with building a career in information systems? Perhaps more than you think. According to some weekend warriors, what you do with your free time can have a real impact on your success on the job.



Peter LoConto, a systems engineer at Dun & Bradstreet Software, says skydiving has improved his self-confidence and taught him to take responsibility for his actions. His concentration is also better, he says, explaining that skydiving "improves your listening skills" by teaching you to stay completely focused on the task at hand.

LoConto, who is responsible for internal IBM MVS operating systems support at D&B Software, first tried skydiving two years ago. Since then, he says, he has been "bitten by the bug" and is working to upgrade his current student status to one of a fully certified sky diver.



For Carol J. Anderson, vice president of information technology at TTX Co. in Chicago, sailing is both a diversion and an ongoing lesson in teamwork.

An avid sailor, Anderson currently races out of the Chicago Yacht Club on Lake Michigan and maneuvers a 52-ft yacht with 14 other crew members. She likens the team sailing and racing concepts to the total quality management programs in place in many large corporations today.

"You can see the same principles applied: Every team member is vital, and ultimately, you are only as strong as your weakest link.

"In an IS department, as in sailing, everyone must be cognizant of the whole picture and be able to step into any vacated situation," she says.

One vital management lesson Anderson says she's learned from her time hauling sail is that good ideas don't always come from the top. "Many people have ideas, and in IS, as in team sailing, everyone has a stake in making decisions," she says.



Carol Anderson *likens team sailing and racing concepts to total quality management programs*



According to Harry S. Keck, there may be no better way to learn teamwork and trust than rock climbing. Keck, project coordinator at Keck & Wood, an Atlanta-based manufacturer of software applications for municipal governments, started scaling cliffs several years ago while working as a software engineer in North Carolina. He was lured into the sport by his former project leader.

Over time, the rock climbing outings improved their relationship because they were able to trust each other's judgment more and had a deepened trust in one another's capabilities.

In the same way that Keck needs to trust the team leader and depend on other members of the group when rock climbing, he says he's learned to place more faith in the members of the software development team he leads.

"Rock climbing, where you are literally linked to one another on the edge of a mountain, really helps you learn to trust and depend on others," Keck says.



One sport may not be enough for everyone. In fact, two sports may not even be enough. Mike Llerande, who is local-area network manager at Union Ink Co. in Ridgefield, N.J., pursues three sports simultaneously: swimming, biking and running. Llerande began training as a triathlete 10 years ago. He says once when he was out of work for an eight-month period, heavy training was a terrific way to relieve stress.

However, triathlon competition isn't just a release for Llerande. It also helps his career. When he worked as a programmer/analyst at a Fortune 500 company on the West Coast, for example, a lot of problems were solved after work in this totally unrelated environment.

"The results were better for both my job and my training. It gave me a better balance — a better synergy," he says.

While Llerande doesn't compete professionally anymore, he still trains and coaches other triathletes. The coaching allows him to take a cerebral approach to what he has been doing physically for so long, Llerande says. As a LAN manager, it's helped him explain things that have always been second nature to him to others.

IS professionals who engage in both competitive and noncompetitive activities in their private lives agree that these extracurricular pursuits enhance their working lives. Take a hike or jump in a lake, they say. It will do your career in information systems a world of good.

Cusack is a free-lance writer based in Marstons Mills, Mass.

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Testing pros: Stay sharp technically



Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Jim Parker, a senior recruiter at Technical Connections, Inc., a Los Angeles-based executive search firm specializing in the placement of computer professionals.

Q I have 16 years of information systems experience, and my specialty is testing. I'd like to update my skills with current technology, but I don't know how much I should absorb because I'll only be using these technologies in an ancillary way. What do you suggest?

A Staying sharp technically is a must for testing professionals. Ignoring emerging trends and technologies will significantly diminish your market value.

Progressive companies treat the testing staff as integral members of the development process and involve them in initial project planning. Insert yourself early in this development process, where most technology evaluations are made. Maintain close working relationships with the developers to enhance your knowledge of their tools.

Q I'm a senior programmer analyst at a large manufacturing company. While I still have my job, the company is laying people off. How can I make sure my luck doesn't run out?

A If you have managed your career by gaining skills that are in demand, and if you are flexible, there will always be a job available for you. The time to plan for your next job is while you're still in your current position.

Keep your contacts open both within and outside your company. If you think a layoff is approaching, let your network know that you are looking for another position. The rules have definitely changed. Job security oo longer comes from your company; rather, it comes from having the right skill set at the right time.

FAST TRACK
CAREER ADVICE FOR THE '90s

Q I've been a systems analyst at a financial institution for four years. When my manager accepted early retirement two years ago, I assumed responsibility for the system he supported. But my company recruited from outside to fill his position.

His replacement has been promoted twice since then, while I've been ignored. How can I get my employer to notice my accomplishments and promote me, too?

A Your situatioo needs immediate attention. Filling management positions from outside the company without reasoo can be demoralizing to staff members, who perceive a limited career path. Does management view you as unqualified? Are your accomplishments truly outstanding and critical?

Approach your manager with your concerns to determine exactly why you weren't promoted. Work with him to develop a plan for correcting any deficiencies. Then, meet regularly with your manager to review your progress. And when the next position becomes available, tell him directly and early that you want to be considered.

Q I am a computer support trainer and specialist at a large law firm, but I'm interested in going into programming. With all the various languages, I'm not sure what is the best approach to take. What language do you recommend I learn to get started?

A Professional programming is far more than just learning a language. You should take an introductory course in data processing. Along with programming, you will learn analysis, design, structured techniques and computing fundamentals. Equipped with this knowledge, you will be well prepared to learn languages.

While taking the class, network with staff programmers. Find out how your training compares with their on-the-job experiences. Then, let your manager know you're interested in an eotry-level programming positioo.

☞ Burned out? Grappling with work/family issues? Worried about skills stagnation? We want to hear from you about these and other issues that affect your career. Call your questions in using the Fast Track line at (508) 820-8522 or send them by fax to Kelly E. Sewell at (508) 875-8931. If we use your question, we'll send you a gift.



How to cope with endless change requests from users



➤ We doo't accept change requests from users. Instead, we ask for a description of the problem. Many times users give us their idea of a request for a change. But, not being analysts, the solution doesn't really meet their needs. We turn that around by asking them to explain the problem. Then we work with the user to resolve it.

Dale Woodland, manager of advanced planning
Loral Data Systems, Sarasota, Fla.

➤ We have developed a steering committee comprised of people from the user community. Each user group has a representative oo the committee. The committee is responsible for prioritizing requests, and we act according to their priorities.

Julie Denison, project leader, applications programming
Anitec Image Corp., Binghamton, N.Y.

➤ User requests can usually be dealt with by using a report writer or utility program. Often the user wants a different format, criteria or data for a report. Our staff works with report writers and utilities to handle these requests.

Bill Walton, director of IS
Habitat for Humanity International
Americus, Ga.



➤ It is a matter of trying to coordinate, prioritize and schedule the work. To do this we try to look at the cost benefit of each request — how it adds value to each system compared to other requests. The value measurement can be either a cost benefit or improved service to our user.

RandyWinkelman,
systems development manager
Black Hills Power & Light Co., Rapid City, S.D.

➤ I meet with the user to try to figure out what business function he is addressing. Then I look at other departments to see if they have similar needs and if we could coordinate activity.

Greg Braginsky,
Systems and application programming supervisor
Augsburg Fortress Publishers Co., Minneapolis

Compiled by Emily Leinfuss, a free-lance writer in Sarasota, Fla.

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Computer Manufacturer	109,518
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medium-scale computers	67,325
small-scale computers	46,945
personal computers	73,925
technical workstations	30,943
Software Vendor	160,264
for large-scale systems	71,152
for medium-scale systems	81,799
for small-scale systems	72,212
for personal computers	66,366
for technical workstations	26,022
Non-CPU Computer Products Manufacturer	34,311
VAR/Dealer/Retailer	44,773
DP Service Bureau/ Contract DP Services	52,375
Consulting/Planning	112,149
Manufacturer (not computers)	229,608
Insurance	62,539
Healthcare	57,788
Banking/Financial Services	123,348
Government Federal/State/Local	107,915
Business Service (except DP)	35,940
Communications Systems	30,264
Public Utilities	43,687
Transportation	49,151
Wholesale/Retail Trade	82,674
Education	91,073

SOURCE: Skill Survey of Computerworld's Audience, June 1991.

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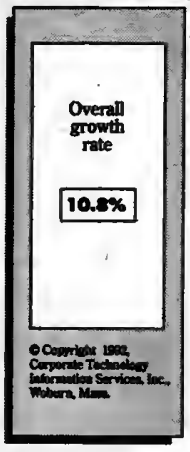
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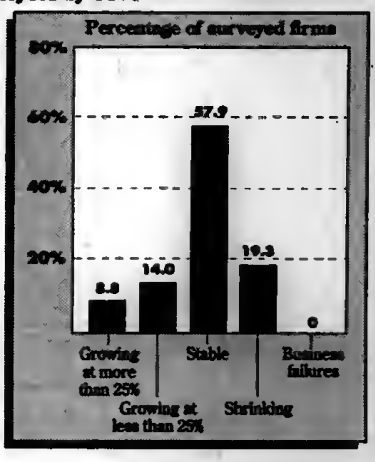
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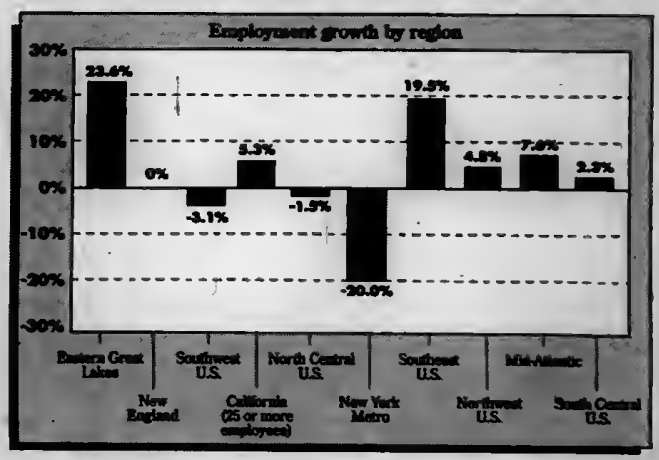
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PUBLIC UTILITIES SOFTWARE – The 57 firms involved in public utilities software surveyed by Corptech last year increased their number of employees by 687.







Don't take 'no' for an answer



BY ALICE BREDIN
SPECIAL TO CW

There you are, closing in on a deal. But when the subject of maintenance comes up, the vendor insists on charging you during the warranty period. You refuse to pay and ask for a break. The vendor says, "We can't."

You may think your back is against the wall, but veteran negotiators say there are ways to get around a "no." In fact, good negotiators are used to dealing with these situations.

"If you are doing a good job of pursuing your goals in negotiations, there will be some 'no's,'" says Joe Auer, president of International Computer Negotiations, Inc. in Winter Park, Fla., a consultancy that helps companies negotiate better deals with high-tech vendors. "If you haven't heard a 'no,' you've left something on the table."

One way to turn a "no" into a "yes" is to investigate the refusal. Is the "no" in response to the request or the concept? For example, if a vendor wants to charge maintenance during the warranty period, you should ask what the problem is.

"The vendor might say, 'Field engineering has to get its money one way or another, so we cannot give away service fees,'" Auer says. "In that situation, you can arrange to pay for the first year [of maintenance] and get credit on software."

Some buyers research what other vendors offer. Carl Schwimmer, director of administration at the College of Business Administration at Northern Arizona University in Flagstaff, tries to have an ace in the hole — the name of another vendor that will do what he wants.

A twist on Schwimmer's approach: Find out how flexible the vendor has been in previous deals by calling some of its customers. It would be difficult for the vendor to turn you down if you can cite a precedent that the vendor representative may not know about if it is outside his region.

The most likely way to do this is by attending conferences and seminars and asking attendees about their negotiating strategies. For serious bargain hunters, on-line negotiating networks are available for buyers to trade tips and techniques electronically.

A formal part of some buyers' negotiating strategy is calling the deal off if they hear "We can't."

"If a vendor is going to be hard and fast, you have to play hard ball," says Edward Barrow, director of the corporate data center at Occidental Petroleum Corp. in Tulsa, Okla. "Tell them you are going to walk. Say, 'I guess that means we cannot do business.'"

Barrow adopted this approach because, he says, compromising usually means you don't meet your objectives. He ootes, however, that in 80% to 90% of the deals, the vendor calls back and says "We can."

"It's surprising how fast the phone rings back, especially if they've been at it for a while," Barrow says.

This hard-nosed approach only works if the technical people testing the product don't give the vendor an advantage by letting on how interested their firm is in the item. "We value their technical opinion, but we don't want them telling the vendor that we have to have it or that it's the best thing they've ever seen," Barrow says.

Good negotiating strategies and dealing with a tough bargainer start a long time before all parties sit down at the negotiating table. The best negotiators have done their homework, which puts them at the same level as the vendor.

For instance, be sure you've got plenty of options. "If you feel backed into the corner with one technology, I suggest thinking about changing technologies. It's not that hard to do in most cases," says Ned Livornese, an attorney with a high-tech private practice in Colorado Springs. Livornese also teaches courses in high-tech software negotiating strategies.

Research is especially important for smaller firms, which have less leverage than large companies. Small firms can make up for what they lack in buying power by planning a technology strategy that leaves them with many buying options. Planning is everything," Livornese says.

Bredin is a free-lance writer based in New York.

(NO)	(YES)
• Sales reps are quick to say "we can't." When they do, buyers should go for broke and push harder. So don't be put off when you hear them say. . .	
• The General Services Administration won't let us.	
• We can't do it for you because we'd be setting a precedent.	
• That's not the way we figured the deal.	
• We have to get any changes approved by headquarters.	

Source: International Computer Negotiations, Inc. "High Tech Procurement" newsletter, Winter Park, Fla.

When 'no' is OK

Part of negotiating is knowing when not to argue with a vendor's "no." These instances include the following:

➤ **Proprietary rights in software negotiating.** Software vendors see a world of limited sale opportunities for their products, so when it comes to proprietary rights, you may not have success negotiating.

➤ **Contract elements.** A vendor will not take out certain elements such as a disclaimer of warranty, an entirety clause and a clause that holds it to assuming consequential damages.

➤ **Lease negotiations.** A vendor will not remove a clause that ensures the buyer will make payments even if the equipment doesn't work.

➤ **Financial stipulations.** Vendors will sometimes refuse to bend on financial arrangements. One user negotiated with a vendor that demanded 50% payment up-front. He checked with the vendor's other customers and discovered that the firm always does business that way.

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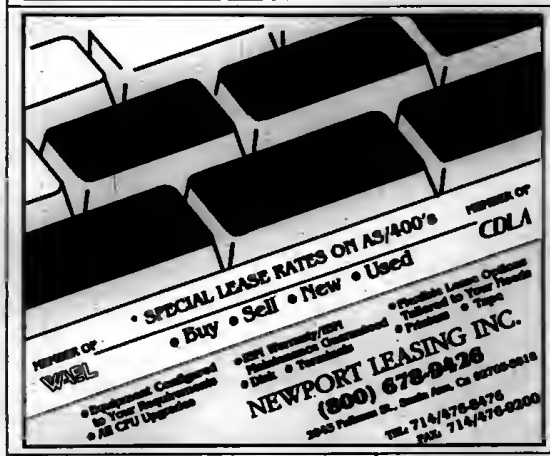
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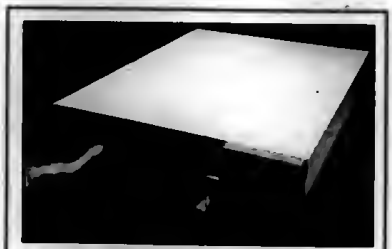


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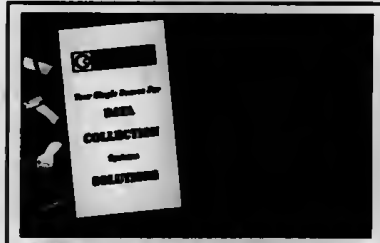
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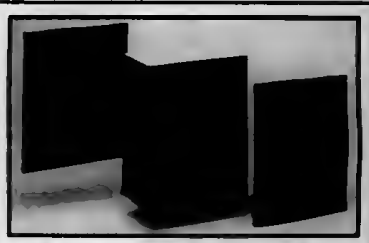


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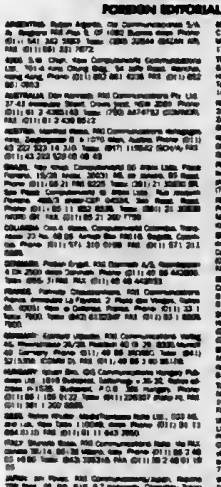
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Shaw Pittman Potts & Trowbridge .1
Slate Corp. .68
SMDS Interest Group .49
SoftSwitch, Inc. .54
Software AG of North America, Inc. .65
Soundview Financial Corp. .97
Sparta, Inc. .16
SQL Solutions, Inc. .43
Star Cutter Co. .15
State University of New York .74
StrataCom, Inc. .46
Stratus Computer, Inc. .98
Straylight Software .65
Sun Data, Inc. .53
Sun Microsystems, Inc. .4,6,15,16,57,62
Sun Microsystems Computer Corp. .16
Sunsoft, Inc. .16
Sybase, Inc. .1,14,15,39,43,96
Sybase International User Group .14
SynOptics Communications, Inc. .16
Syntrex Technologies, Inc. .63

T

Tandem Computers, Inc. .12
Tangram Systems Corp. .52
Technology Investment Strategies Corp. .59
Technology Partners, Inc. .12
TechWorks International .69
Teledec Corp. .57
Teleglobe Canada, Inc. .53
Telepartner .52
Tennessee Temple University .46,53
Texaco, Inc. .46
Texas Instruments, Inc. .68
The ASK Group, Inc. .59,96
The Boeing Co. .59,77
The Chase Manhattan Bank NA .4
The Hertz Corp. .12
The Ringina Co. .77
The Rockefeller University .74
Tiara Computer Systems, Inc. .
Trico Marine Management, Inc. .74
Toshiba America Information Systems, Inc. .16
Toyota Motor Corp. .77
Treasury Department .1
Treehouse Software, Inc. .69
TTX Co. .63

U

Union Ink Co. .63
Unisys Corp. .12
United States Public Health Service .74
University of Dayton .78
University of Southern California .71
University of California at Berkeley .28
University of West Virginia .1
Unocal Corp. .6
Union Insurance Co. .35
U.S. Air Force Materiel Command .1
U.S. Department of Defense .1
U.S. Department of Commerce .97
U.S. Environmental Protection Agency .1
U.S. Postal Service .59
US West .20

V

Verimation, Inc. .54
Vitalink Communications Corp. .53

W

Wall Data, Inc. .65
Wal-Mart Stores, Inc. .1
Wang Laboratories, Inc. .43
Wausau Insurance Co. .1
Wells Fargo Wholesale Services .6
Western Digital Corp. .6
Wolkongong Group, Inc. .53
WordPerfect Corp. .6
WorkGroup Technologies, Inc. .8

X

XDB Systems .59
X/Open Co. .59

Sun Microsystems, Inc.	Hold	Smith Barney, Harris Upham & Co.
	Buy	S.G. Warburg & Co.
Silicon Graphics, Inc.	Hold	Smith Barney
	Strong buy	Alex. Brown & Sons, Inc.
Intergraph Corp.	Source of funds/ Underperform	Alex. Brown & Sons

Industry Almanac

SECTOR FOCUS: DATABASE SOFTWARE FOR UNIX

The stocks of midrange and Unix database purveyors such as **Informix Corp.** (INFX) have been strong performers lately. In an Oct. 21 report, Montgomery Securities said it sees room for continued growth despite the high values these issues currently carry.

Montgomery Securities categorized these companies under "Network Computing Software," reflecting the distributed nature of their database management products.

The ongoing transition of the user population to client/server and other networked computing architectures will provide a prolonged window of opportunity for these vendors.

Montgomery Securities analysts Bill Shattuck and Doug Crook projected collective compound annual growth of more than 50% through 1996 for software vendors whose applications work across enterprise networks.

Other factors contributing to this healthy expansion include the move toward a cease-fire in the Unix wars and the growth of the database applications tools market.

The rapidly increasing ability of Unix hardware to handle industrial-strength on-line transaction processing will also open new opportunities for Unix database and tools vendors.

In addition to Informix, Montgomery Securities recommends the purchase of several stocks in this sector:

•**Oracle Corp.** (ORCL). Oracle is strongly positioned, with support for Novell, Inc.'s NetWare and IBM's OS/2 as well as Unix servers. Version 7.0 of the company's flagship relational database management system features greatly improved client/server capabilities.

•**Sybase, Inc.** (SYBS). The forthcoming Version 5.0 of the Sybase RDBMS is expected to automatically manage data that is duplicated on multiple servers for fast access (see story page 14).

•**Progress Software Corp.** (PRGS). Progress Software is approaching a new Unix product cycle. Progress applications are easily ported to new platforms, providing an advantage for users linking heterogeneous systems.

•**The ASK Group, Inc.** (ASKI). Product transitions resulted in an earnings shortfall for the company's most recent quarter.

However, Montgomery Securities said it believes the long-term outlook is bright and that the current value of the stock provides a good buying opportunity.

DEREK SLATER

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, NOVEMBER 6, 1992

TOP PERCENT GAINERS

Microcom Inc.	46.19
Esmet Corp.	44.44
Kendall Square Research	25.09
CE Software	25.67
Exabyte	30.45
Bolt, Beranek & Newman	21.38
State of the Art	21.74
Cypress Semiconductor Corp	21.33

TOP PERCENT LOSERS

Sequoia Systems Inc.	-30.00
Intelligent Electronics	-18.50
Evans & Sutherland Inc.	-14.32
CompUSA Inc	-12.42
Cray Computer	-9.63
Mesa Software	-9.09
Wellfleet	-7.39
Banyan Systems Inc.	-6.63

TOP DOLLAR GAINERS

Cisco Systems Inc. (H)	6.75
Newbridge Networks Corp.	4.38
Cabletron Systems (H)	4.25
System Software Assoc.	4.00
Microsoft Corp.	4.00
Exabyte	4.00
Wellfleet Communications (H)	3.88
BMC Software Inc.	3.50

TOP DOLLAR LOSERS

CompUSA Inc.	-4.88
Mylex Corp.	-4.50
Bellsouth Corp.	-2.88
American Info Techs Corp	-2.50
Southwestern Bell Corp.	-2.38
Bell Atlantic Corp.	-2.25
Intelligent Electronics	-2.00
Sungard Data Systems	-1.75

Exch	52-Week High	52-Week Low		Nov. 6 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						Up 4.95%
OTC	23.13	9.63	3 COM Corp. (H)	23.13	2.13	10.13
NYS	70.63	56.25	American Info Techs Corp	54.25	-2.50	3.75
NYS	45.38	32.88	AT&T	44.38	1.38	3.87
OTC	4.25	0.75	Ariel Communication Corp.	1.44	0.13	9.52
NYS	22.00	10.25	Banyan Systems Inc	10.75	-1.38	-6.63
NYS	46.75	40.38	Bell Atlantic Corp	45.38	-2.25	-4.72
NYS	55.63	43.38	Bellsouth Corp.	48.88	-2.88	-5.56
NYS	6.75	3.63	Bolt, Beranek & Newman	4.38	0.88	21.38
NYS	72.25	39.63	Cabletron Systems (H)	72.25	4.25	6.25
OTC	31.00	17.50	Chipcom Corp.	24.00	-0.25	-1.03
OTC	65.75	24.00	Cisco Systems Inc. (H)	65.75	6.75	9.88
OTC	35.25	8.50	Compression Labs Inc	11.63	1.38	13.41
OTC	3.88	0.88	Data Switch Corp	2.88	0.06	3.15
NYS	23.63	13.75	Digital Comm. Assoc.	19.88	-0.38	-2.24
OTC	15.25	7.75	Digital Systems Int'l Inc.	7.88	-0.25	-3.08
OTC	18.88	3.63	DSC Communications (H)	18.50	1.25	7.25
OTC	10.88	4.75	Fibronics Int'l Inc.	9.25	-0.25	-3.85
OTC	37.50	10.50	Frontel Corp.	17.00	1.00	6.25
OTC	3.38	1.13	Gandalf Technologies Inc	1.75	0.25	16.67
OTC	2.25	0.88	Gateway Communications	1.31	-0.06	-4.51
NYS	8.63	2.38	General Datacomm Inds.	4.63	0.63	19.63
ASE	5.88	0.94	Go Video	2.63	0.13	5.26
NYS	65.75	28.88	GTE Corp.	29.50	-0.63	-1.83
NYS	70.63	50.00	ITT Corp.	66.25	1.13	1.73
OTC	37.63	25.25	MCI Communications Corp. (H)	36.00	-1.38	-3.75
OTC	14.88	5.00	Microcom Inc.	5.00	1.63	48.19
NYS	19.25	9.50	Network Equipment Tech	10.63	-0.75	-6.59
OTC	25.50	9.00	Network General	15.88	1.50	10.43
OTC	20.00	6.50	Network Systems Corp	14.75	1.13	8.26
OTC	27.50	9.63	Newbridge Networks Corp	27.50	4.88	16.92
NYS	45.25	33.50	Northern Telecom Ltd	39.75	0.00	0.00
OTC	32.50	22.13	Novell Inc.	31.88	1.38	4.51
NYS	89.88	68.13	Nynex Corp.	75.88	-4.50	-5.37
OTC	37.50	14.50	Octel Communications Corp	20.50	0.50	2.50
OTC	9.88	3.38	Parvi Data Comm. Hlwks.	4.63	0.38	8.82
OTC	63.00	10.25	Picturetel Corp	22.13	1.50	7.27
OTC	18.75	7.00	Proteon Inc	9.88	1.63	19.75
NYS	50.63	13.88	Scientific Atlanta Inc. (H)	50.63	0.75	2.51
NYS	70.50	56.25	Southwestern Bell Corp	64.38	-2.38	-3.56
NYS	86.38	63.75	Sprint Corp.	25.63	0.00	0.00
OTC	21.13	4.88	Standard Microsystems Corp	20.63	1.25	6.46
OTC	63.00	15.25	Synoptics Communications (H)	63.00	2.00	3.88
NYS	40.00	35.88	US West Inc.	38.13	-1.13	-2.88
OTC	56.50	24.00	Wellfleet Communications (H)	56.50	3.88	7.39
PC and Workstations						Up 1.30%
OTC	13.63	3.50	Advanced Logic Research	4.50	0.63	13.39
OTC	70.00	41.63	Apple Computer Inc	65.75	3.25	5.19
OTC	24.63	11.25	AST Research Inc	17.88	-0.38	-2.05
NYS	16.75	9.75	Commodore Int'l	7.25	0.00	0.00
NYS	42.38	29.13	Compaq Computer Corp	42.00	1.50	3.70
OTC	37.38	13.91	Dell Computer Corp. (H)	27.38	3.25	9.53
OTC	7.75	0.88	Everex Systems Inc.	1.13	-0.19	-14.32
NYS	24.63	21.25	Harris Corp. (H)	32.88	-1.00	-2.95
NYS	88.00	44.63	Hewlett-Packard Co.	88.63	1.75	3.06
NYS	29.75	14.13	Silicon Graphics	29.63	1.88	7.46
OTC	36.13	63.75	Sun Microsystems Inc. (H)	34.38	-0.38	-1.08
NYS	21.25	22.25	Tandy Corp.	25.25	-0.25	-0.94
NYS	11.13	5.50	Zenith Electronics	6.75	0.00	0.00
OTC	29.50	2.75	Zeos International Ltd.	4.00	-0.13	-3.03
Large Systems						Up 3.36%
ASE	30.63	7.75	Amdahl Corp.	9.75	0.63	7.88
NYS	18.38	4.75	Convex Computer	7.75	0.00	0.00
OTC	16.88	7.88	Cray Computer	4.50	0.25	5.92
NYS	52.25	19.00	Cray Research Inc.	21.75	0.50	3.39
NYS	19.13	7.13	Data General Corp	10.13	-0.63	-5.81
NYS	64.63	29.13	Digital Equipment Corp.	38.75	3.00	8.39
NYS	100.75	85.00	IBM	89.25	0.63	0.63
OTC	13.25	5.30	Kendall Square Research	10.00	2.25	29.03
NYS	119.25	86.25	Matsushita Electronics	90.25	-0.75	-0.82
OTC	17.50	9.00	Pyramid Technology	10.00	1.25	14.25
OTC	17.50	9.88	Sequent Computer Sys.	15.50	0.88	5.98
OTC	18.38	2.75	Sequoia Systems Inc	3.50	-1.50	-30.00
NYS	34.25	29.50	Stratus Computer Inc.	34.25	1.63	4.88
NYS	15.13	9.50	Tandem Computers Inc.	14.63	1.38	10.46
NYS	11.75	3.63	Unisys Corp.	8.63	0.25	2.98
ASE	7.50	0.25	Wang Labs Inc. (B)	0.50	0.00	14.19
Software						Up 4.69%
OTC	66.50	25.25	Adobe Systems Inc.	37.50	1.88	5.26
OTC	44.25	10.25	Aldus Corp.	15.25	-0.75	-4.69
OTC	19.75	7.00	American Software Inc.	9.00	0.75	9.09
OTC	63.00	9.75	Ask Computer Systems	17.13	1.63	9.20
OTC	59.50	25.25	Autodesk Inc	63.63	2.75	5.42
OTC	37.75	3.75	Bachman Info. Systems	8.00	0.50	6.66
OTC	42.63	32.00	BGS Systems Inc.	37.00	-1.50	-3.90
OTC	75.00	37.25	BMC Software Inc	63.63	3.50	5.83
OTC	25.88	12.25	Boole & Babbage (H)	24.00	-1.50	-5.88
OTC	86.75	29.25	Borland Int'l Inc	33.63	-0.75	-2.18
OTC	10.50	3.63	CE Software	4.75	1.00	26.67
ASE	25.88	9.75	Cheyenne Software Inc. (H)	28.88	1.63	5.98
OTC	13.13	5.63	Cognos Inc.	5.88	0.00	0.00
NYS	16.88	7.88	Computer Associates (H)	16.88	1.38	7.89
NYS	12.38	4.75	Computervision Corp.	9.63	0.63	10.42

Exch	52-Week High	52-Week Low		Nov. 6 Close	Wk Net Change	Wk Pct Change
OTC	20.00	6.75	Cognizant Inc.	10.88	0.38	2.44
OTC	47.38	6.00	Esmet Corp.	8.75	3.00	44.44
OTC	25.00	11.50	Group I Software	19.63	2.38	19.23
OTC	6.88	3.88	Hogan Systems Inc.	8.00	0.13	2.13
OTC	38.25	18.50	Information Resources	27.38	-0.38	-1.35
OTC	21.00	9.88	Informix Corp.	19.75	1.00	5.33
OTC	22.38	11.50	Intergraph Corp.	13.25	-0.50	-1.72
OTC	15.00	7.00	Interleaf Inc.	11.13	-0.50	-4.30
OTC	20.25	10.25	Intersolv Inc.	14.00	-0.88	-5.88
OTC	21.38	9.50	Knowledgeware Inc.	13.75	0.88	6.77
OTC	48.25	28.75	Legent Corp.	46.25	1.75	3.93
OTC	38.75	14.75	Lotus Development	32.25	2.13	10.56
OTC	7.38	1.38	Mesa Software	2.50	-0.25	-9.09
OTC	22.25	9.25	Mentor Graphics	7.38	0.00	0.00
OTC	37.38	27.25	Micro Focus	30.13	-0.50	-1.37
OTC	20.50	8.50	Microgrph Inc.	8.75	0.00	0.00
OTC	92.75	61.84	Microsoft Corp.	92.75	4.00	4.31
OTC	24.13	12.00	Oracle Corp.	24.13	1.38	6.43
OTC	63.25	18.63	Parametric Technology	50.63	-0.38	-0.74
OTC	11.00	3.50	Phoenix Technologies	4.13	0.13	3.13
OTC	25.25	11.25	Platinum Technology	18.38	-0.88	-4.55
OTC	88.50	39.00	Progress Software Corp	63.50	0.00	0.00
OTC	6.00	4.00	Quarterdeck Office Sys	6.13	0.25	4.26
OTC	32.75	11.70	Rainbow Technologies Inc.	23.75	0.50	2.19
OTC	22.75	4.00	Rasterops	9.25	0.00	0.00
OTC	17.25	3.63	Ross Systems	5.50	0.38	7.32
OTC	19.63	6.50	Saqqara USA Inc. (H)	19.63	0.88	8.88
OTC	30.25	8.75	Software Publishing Corp.	8.75	-0.38	-4.11
OTC	6.88	3.00	Software Toolworks Inc.	4.44	0.44	10.86
OTC	7.25	0.75	Sprinkler Software	1.75	0.25	16.67
OTC	32.50	8.75	State of the Art	21.00	1.50	21.74
NYS	29.25	13.75	Sterling Software Inc.	63.00	0.88	2.56
OTC	63.00	6.03	Struct. Dynamics Research	12.25	1.25	11.38
OTC	42.25	16.25	Sybase Inc (H)	42.25	0.50	1.20
OTC	51.00	0.88	Symantec Corp	12.75	0.13	0.98
NYS	19.88	5.25	Systems Center Inc.	8.63	-0.25	-2.84
OTC	34.25	19.19	System Software Assoc.	25.75	4.00	18.39
NYS	13.25	2.50	Triniti Corp	3.63	-0.25	-6.45
OTC	23.75	14.00	Walker Interactive Systems	16.25	-0.38	-2.01
OTC	5.50	1.50	Wordstar	1.88	0.25	19.38
Semiconductors						Up 3.59%
NYS	21.50	7.38	Advanced Micro Devices	10.25	-0.25	-1.92
NYS	12.38	7.13	Analog Devices Inc. (H)	12.00	0.00	0.00
OTC	14.38	6.75	Atmel Corp.	14.25	0.75	5.88
OTC	14.13	3.25	Chips and Technologies	4.75	0.75	18.75
NYS	19.63	7.38	Cypress Semiconductor Corp	11.38	2.00	21.33
NYS	13.38	6.75	Dallas Semiconductor	12.25	0.25	2.09
OTC	66.13	39.75	Intel Corp.	66.00	1.38	1.22
NYS	9.88	4.88	LSI Logic Corp.	9.75	0.75	8.96
NYS	22.38	12.13	Micron Technology	19.63	0.25	1.29
NYS	67.75	57.50	Motorola Inc.	66.88	0.38	0.39
NYS	14.13	4.38	National Semiconductor (H)	12.13	0.13	1.02
OTC	27.00	9.25	Sierra Semiconductor	13.63	0.88	7.22
NYS	91.25	39.00	Texas Instruments (H)	50.75	1.63	3.31
OTC	10.88	6.00	VLSI Technology	7.63	0.13	1.67
OTC	7.00	2.13	Weitek	4.50	-0.38	-7.69
ASE	7.38	2.00	Western Digital Corp.	7.50	0.13	1.82
OTC	31.00	14.88	Xilinx	19.50	0.75	4.00
OTC	33.50	19.50	Zilog Inc.	30.25	-1.38	-4.10
Peripherals and Subsystems						Up 4.95%
OTC	11.13	3.63	Archive Corp.	10.75	0.19	1.19
OTC	39.75	13.75	Benchtec Inc.	25.88	-0.38	-3.54
OTC	26.50	9.25	Cambex Corp.	14.25	-0.50	-3.39
ASE	14.50	9.88	Pegasus Corp.	12.63	0.00	0.00
NYS	25.88	12.63	Conner Peripherals	13.88	0.13	0.63
OTC	63.50	14.25	Data Race Inc. (H)	20.50	1.63	8.91
ASE	19.88	4.75	Distacom Corp.	6.13	0.13	1.88
NYS	24.75	4.38	EMC Corp (H)	24.75	1.38	5.90
OTC	8.25	4.75	Emulex Corp.	7.25	1.00	18.00
OTC	23.00	13.25	Evans & Sutherland	19.00	1.75	10.14
OTC	40.63	12.00	Exabyte	19.13	4.00	88.45
OTC	35.63	19.75	Intelligent Info. Systems (H)	23.13	0.50	1.40
OTC	11.25	4.75	Iomega Corp.	7.38	0.38	5.60
OTC	34.75	10.25	IPL Systems Inc.	12.00	-0.63	-4.00
OTC	21.25	10.75	Kronos Inc.	19.25	0.25	1.32
OTC	15.63	4.25	Maxtor Corp.	14.63	0.25	1.74
OTC	12.63	9.38	Micropolis Corp.	9.00	0.75	10.34
NYS	108.13	85.38	3M Co.	104.88	2.00	1.94
OTC	8.75	3.50	Printronix Inc.	6.25	0.63	10.83
NYS	24.00	8.88	QMS Inc.	9.00	0.25	2.22
OTC	18.00	8.88	Quantum Corp	13.25	1.00	8.16
OTC	12.75	3.70	Radius Inc.	8.63	-0.38	-4.25
NYS	13.38	8.50	Recognition Equipment (H)	13.38	0.75	5.94
OTC	13.13	5.75	Reveal Inc.	12.50	1.63	14.94
OTC	17.63	7.75	Seagate Technology	17.00	2.13	14.29
NYS	75.00	21.00	Storage Technology	21.75	2.13	7.17
NYS	22.88	19.00	Tektronix Inc	22.00	0.88	4.14
NYS	82.25	66.25	Xerox Corp	75.25	1.00	1.35
Services						Up 0.05%
OTC	32.00	11.84	American Mgmt. Systems (H)	63.38	-1.38	-6.32
NYS	5.38	3.88	Anacomp Inc.	3.75	0.00	0.00
OTC	21.25	12.50	Analysts Int'l (H)	20.50	-0.75	-3.53
NYS	50.75	36.13	Auto Data Processing (H)	50.75	1.50	4.91
NYS	19.63	7.09	Candlen Corp. (H)	19.63	0.13	0.75
NYS	23.44	12.50	Comdisco Inc.	15.00	-0.13	-0.83
OTC	13.50	6.75	Computer Horizons (L)	8.50	1.00	13.33
NYS	34.88	57.00	Computer Sciences	70.75	1.00	1.43
NYS	10.13	7.00	Computer Task Group	9.00	0.25	3.25
OTC	46.50	15.50	CompUSA Inc.	34.88	-4.88	-12.42
OTC	19.25	9.00	Corporate Software	11.75	0.88	8.05
OTC	83.75	7.75	Egghead Discount Software	10.00	0.00	0.00
NYS	33.08	39.25	General Motors E (EDS)	88.25	-0.75	-2.86
OTC	63.38	8.25	Intelligent Electronics	6.75	-2.00	-16.63
OTC	14.38	6.63	Manpel	10.25	0.13	1.23
OTC	15.75	5.75	Medicus Inc. (L)	7.75	0.75	10.71
OTC	36.25	17.38	Paychex	26.25	2.25	8.62
NYS	77.63	66.00	Policy Management Sys. (H)	73.28	-1.75	-2.33
NYS	46.25	27.88	Reynolds and Reynolds (H)	46.75	3.38	7.44
OTC	32.00	22.00	SEI Corp.	27.75	0.50	1.83
OTC	24.38	19.88	Shared Medical Systems	20.38	-1.25	-5.75
OTC	63.00	19.05	Sungard Data Systems	27.25	-1.75	-6.03
NYS	3.63	1.13	Ultimate Corp	1.25	0.00	0.00

KEY (H) — New annual high (L) — New annual low

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IN BRIEF

Unisys cuts health care

■ **Unisys Corp.** last week said it is phasing out full cost coverage of health care for retired employees. The Blue Bell, Pa., firm said escalating national health costs and a change in accounting has made it too expensive to continue coverage.

Under the new accounting method, Financial Accounting Standards Board Statement 109, Unisys must reserve funds on its balance sheet to cover projected health care costs of both current and future retirees.

Unisys estimated that it will take a charge of no more than $260 million in the first fiscal quarter of 1993 to cover its projected medical costs. The cumulative effect of this charge will increase net income in the quarter by $325 million to $425 million.

■ **CompUSA, Inc.**, a Dallas computer superstore retailer, reported first-quarter net profits of $1.3 million, up 48% from the same period last year. Sales increased 56% to $263.4 million in the quarter. The company's 11 new stores contributed almost half of the sales increase in the period.

■ **Wordstar International, Inc.** said it is cutting worldwide staff by 26%, to 130 employees, as part of an ongoing expense reduction plan. Wordstar, which began life as MicroPro International Corp. in 1978 and has 5 million users, has struggled during the last few years to keep pace with market leader WordPerfect Corp.

■ **IPL Systems, Inc.**, a Waltham, Mass.-based storage firm, said healthy demand for disk array subsystems helped boost fiscal third-quarter sales 24%, to $15.7 million. However, profits dropped 44%, to $1 million from $1.8 million, partly because of cost associated with switching from third-party to direct sales channels.

EDS still unscathed by GM cuts

Faced with heavy losses, automaker relies on subsidiary for financial help

BY MARK HALPER
CW STAFF

DETROIT — While General Motors Corp. may be looking for price or contractual concessions from subsidiary Electronic Data Systems Corp., analysts said they believe the auto giant will spare its data processing subsidiary the cuts it is inflicting on other suppliers.

That is because the faltering automaker is counting more than ever on a solid EDS and EDS stock — GM Class E — as a source of financial backing at a time when its coffers have been depleted by losses costing billions of dollars.

That outlook holds true, analysts said, through last week's management changes in which the automotive giant named a new chairman, former Procter & Gamble Co. chief John Smale; promoted GM President John Smith to the additional post of chief executive officer; and replaced EDS overseer Robert Schultz — who retired — with GM general counsel Harry Pearce. Those actions followed the resignation a week earlier of Robert Stempel, former chairman and CEO.

As Soundview Financial Corp. Vice President Chuck Phillips noted, the changes "inject an element of uncertainty — EDS knows the new guy a lot less."

But most analysts said they expect EDS' GM contracts will remain relatively unscathed under the new leadership.

Some analysts, such as Terry Quinn at Kidder Peabody & Co., suggested that GM's interest in a healthy EDS could be motivated by a desire to sell the subsidiary for a much-needed capital infusion. "GM would likely spin off the company rather than take action that would hurt EDS," Quinn said.

That scenario comes in a modified version, in which GM could have an interest in selling EDS shares down the road as a way to raise cash, observed Cato Carpenter, an analyst at Alex. Brown & Sons, Inc.

And short of any sale plans, GM — which wholly owns EDS but sells Class E stock that is based on the integrator's performance — simply needs a strong EDS stock price, analysts noted.

Less GM business

EDS, however, continues to lower the GM mix of its business. GM, which in the mid-1980s accounted for two-thirds of EDS' revenue, represented about half of its $7.1 billion in business — $3.3 billion — in the year ended Dec. 31, 1991. It is imperative that these deals remain profitable for the outsourcer, analysts said.

"GM has a lot riding on the performance of GM E stock, so EDS may continue to be a sacred cow," Carpenter said.

That observation may rub a legion of GM suppliers the wrong way. That is because new GM purchasing chief J. Ignacio Lopez de Arriortua has implemented tough cost reviews and in some cases replaced suppliers.

GM's EDS posture is a sticky wicket of business politics, analysts noted. Factors keeping GM's EDS knife in its sheath include the following:

- A 1984 master agreement that guaranteed EDS a certain profit margin on all GM business. EDS typically receives between 10% and 12% margins on its GM contracts, compared with 13% and 14% for non-GM contracts, analysts said.
- A GM stock offering early this year that gave buyers an option to convert 15 million shares of the new GM stock into GM Class E stock.

Because GM pays Class E dividends out of EDS income, the automaker is not about to make any contractual cuts that would undermine GM's EDS revenue and dampen the public's interest in buying this new EDS-linked stock, analysts said.

"They have much more riding on it now because they have a specific issue based on GM stock converting into EDS stock," Carpenter observed.

Analysts said EDS will make small price concessions on some projects if, as Anderson noted, Arriortua is to bring data processing costs down from 2½% of sales to less than 2% of sales.

GM said that while it implemented new cost review measures for EDS during the last several months, those reviews lack one element to which GM has subjected other suppliers — the prospect of replacement.

"EDS and GM are conducting benchmarks to make sure EDS is competitive," a GM spokeswoman said. While cost reviews with other suppliers have entailed inviting bidders in as possible replacements, the spokeswoman said EDS and GM are conducting their benchmark studies "without going out and quoting the business."

If EDS and GM were not linked by ownership, the shrinking anto behemoth would probably be more solicitous of EDS' competitors, noted Howard Anderson, chairman of The Yankee Group in Boston.

Safe and secure?

EDS' GM contracts may be safe, the company continues to rack up outsourcing wins and in the third quarter ending Sept. 30, it reported an impressive 15% income gain to $167.3 million.

But as with other outsourcers, the recessionary economy has strained some existing deals. Last week, a 4-year-old commercial megadeal grew questionable when the client, First City Bancorp. of Texas, filed for Chapter 11 bankruptcy protection a few days after Federal Deposit Insurance Corp. took charge of the bank.

Chuck Phillips, vice president of Soundview Financial in Stamford, Conn., noted that if the takeover and bankruptcy lead to a loss of business, EDS may actually receive a blessing in disguise. "At best, the account is break-even, and it's probably unprofitable," said Phillips, who notes that the value of the contract was adjusted downward "a couple of times" during the course of the contract.

The 10-year deal, once worth about $50 million a year, has decreased by about 20%, Phillips estimated. Such adjustments are growing more common. IBM, for instance, recently restructured its outsourcing deal with Bank South Corp. [CW, Nov. 2].

EDS earlier this year fell victim to the world of change when client Freeport-McMoRan, Inc. dropped EDS in favor of IBM and Andersen Consulting.

MARK HALPER

PC prices OK despite levies

BY MICHAEL FITZGERALD
CW STAFF

WASHINGTON, D.C. — While fears of higher systems prices have sprouted in the wake of recent antidumping tariffs imposed on Korean chip makers, price tags should remain stable, analysts and vendors said last week.

The U.S. Department of Commerce recently hit several Korean manufacturers of dynamic random-access memory (DRAM), including heavyweight Samsung Electronics Co., with a preliminary decision recommending tariffs as high as 88% on their products, because of predatory pricing practices. The decision means the Koreans must contribute the difference between their pricing and fair market value to an escrow fund that could total $450 million.

The Korean manufacturers lose the bond only if the Commerce Department and the International Trade Commission both rule that manufacturers were selling DRAMs below market value into the U.S. The Commerce Department will not rule until March 1993.

Korean companies hold some 20% of the U.S. DRAM market, according to Phoenix-based researcher In-Stat, Inc. Despite worldwide overcapacity for DRAM makers, In-Stat said some U.S. chip brokers raised prices as much as 66% in the last week.

No conscience

"There's some major profiteering going on here, where DRAM brokers with no conscience are profiting from perceived bad news," said Dean McCarron, an analyst at In-Stat. McCarron said DRAM supplies continue to be stable, and prices on DRAMs have not increased.

Small PC makers and end users should shop around because some chip brokers continue to charge market rate, McCarron said. Big companies will likely not see prices rise. IBM makes its own DRAMs and is completely unaffected by the tariffs. A spokesman at Compaq Computer Corp. said the company would simply redirect any Korean DRAMs it might purchase to its overseas facilities.

Spokesmen at Gateway 2000, Inc. in North Sioux City, S.D., and at Fountain Valley, Calif.-based Kingston Technology Corp., the biggest board maker in the country, also said their component prices should not be affected for at least the next two quarters.

Wysiwyg

FACTS 'N' FIGURES

Quattro Pro for Windows

Total lines of code:
572,316

[redacted]

Total months in development:
31

[redacted]

Total vacation time taken by team during two years of development:
10 weeks

GREAT NAMES

Andrew M. Prophet
President
AP Research, Cupertino, Calif.

WINNER

Best technical paper, Society for Computer Simulation:

Simulation Analysis of a Collisionless Multiple Access Protocol for a Wavelength Division Multiplexed Star-Coupled Configuration

- We'll wait for the movie

BDUs*

"One of our remote users had inadvertently turned on the key click on the keyboard, although the user didn't know what it was. Every time a key was pressed, it made a squeek noise. The user called me up to ask if we had any computer oil in stock, or if it would be OK to order some to oil her keyboard and get rid of the noise."

Bert Beadle
DP manager
Merkel Donohue

*Brain Dead Users

THE KISS OF DEATH

"I'm probably the greatest computer genocide guy going. That's kind of a paradox. It's one of the most brutal things you can do to an engineer: kill his project. But the worst thing for an engineer is to face the market and have a product fail in the marketplace."

Gordon Bell
Former Digital Equipment Corp. engineering manager who guided the creation of the PDP-11 and VAX series

Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Dix or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

CW Chart: Stephanie Faucher

The 5th Wave



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INSIDE LINES

Multimedia-mania

Tomorrow, Apple will try to upstage today's joint Microsoft/Intel multimedia announcement by announcing QuickTime for Windows. Apple hopes its product's ability to run the growing installed base of Macintosh QuickTime applications on DOS-based PCs will keep Microsoft in catch-up mode. Microsoft's upcoming Windows for Video Computing (WFV) is a layered extension of the Windows environment that will let users run animation and full-motion video as QuickTime does. Microsoft will sell WFV in a separate shrink-wrapped package through retailers. More interesting is Intel's role in the announcement: The chip maker has reportedly built video capture and playback software that will be on display.

Cajun cravings

Apple is slated to announce a new suite of development tools at the MacIS user group conference in New Orleans this week. The tools were designed to enable IS professionals to easily build client/server applications that operate on a variety of platforms. At least nine independent software vendors — including Brio, Powersoft, Digitalk and Mitem — will stand shoulder-to-shoulder with Apple execs to announce support for the new tools.

Worse than in-laws

Intel sits atop the heap in processors right now, but its biggest customer, IBM, is ready to roll with a 100-MHz, 32-bit version of its homegrown Intel derivative chip, the SLC. The chip, which sources say has been shown to potential OEMs such as AST Research, uses clock-tripling to run at 33 MHz externally and 100 MHz internally. IBM can't sell the chip by itself, but it has been showing a chip surface-mounted on a daughterboard that basically matches the chip size.

Customer dissatisfaction

While DEC focuses on customer satisfaction, a minor uproar has been occurring on DECUServe, the network for DECUS, the DEC user society, about changes taking place in DEC's Documentation Support Service. It appears that DEC is removing volumes of documentation that had been previously available, repackaging it and then charging users for information they had been receiving as part of the service, according to Bill Mayhew, a DECUS chairman. "On the one hand, DEC is improving business practices, but on the other, there are things like this happening, and a product manager says it's a 'corporate edict.' I said, 'Where is the customer-driven company?' " Mayhew said.

Not fault tolerant

Indications are that DEC may soon shut down its fault-tolerant development unit in Marlboro, Mass., after unveiling the high-end VAX FT 810 model this month. The machine, which tops off DEC's fault-tolerant line, was due in August but was delayed when turmoil over founder Ken Olsen's resignation hit full boil. Several of the unit's 150 employees have sent resumes to rival and neighbor Stratus Computer, one analyst said.

Plans a changin'

Grid has changed its mind on its convertible pen-and-keyboard notebook computer. Instead of showing it at its shareholder meeting on Tuesday, sources near the company said, Grid will wait to release the product at Comdex/Fall '92. AST, meanwhile, is delaying its Renegade low-end product line, sources say, to work on making the systems smaller and lighter.

Computers definitely improve over time: Compaq shipped its first portable 10 years ago last Tuesday. The 20-by-8½-by-16-in. Compaq Portable PC used an Intel 16-bit 8088 processor; had 256K bytes of RAM, expandable to 640K; and had two double-sided, 5¼-in. disk drives, no hard drive and a 9-in. monochrome display. It weighed 28 pounds. Today, Compaq will ship a battery-powered notebook with a 32-bit 486SL, an active-matrix color screen, up to 200M bytes of storage and 20M bytes of RAM in a 6.4-pound package. The original portable was so successful that when Compaq finally retired the product line in 1986, the company founders formally buried the last model at Compaq headquarters. The 4/25C, by contrast, will probably be retired unceremoniously in 18 months or so. Don't bury your news, though. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

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